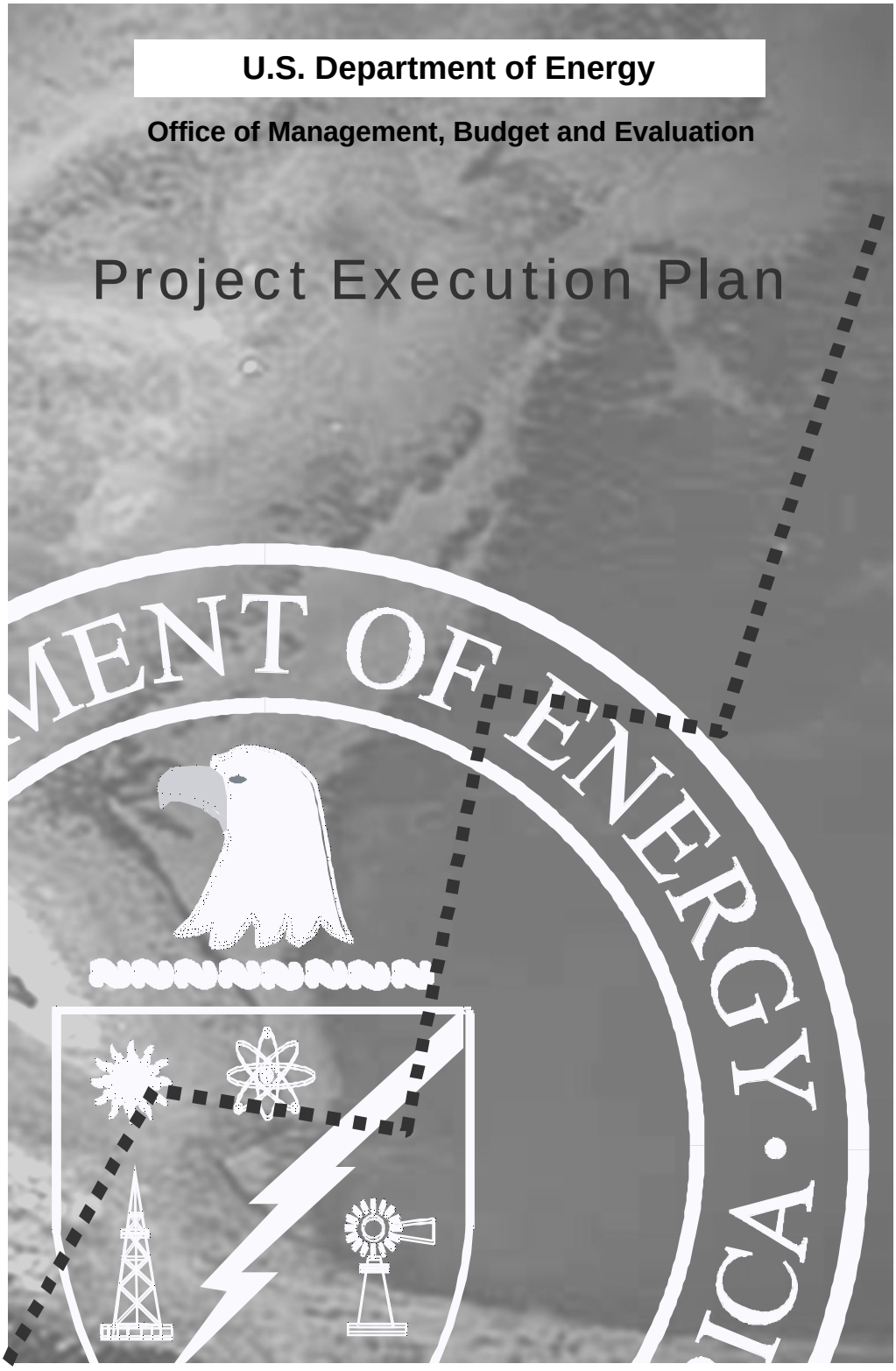

Initiated by: Office of Engineering and Construction Management

PROJECT EXECUTION PLAN

As described in DOE Order 413.3 and DOE Manual 413.3-1, the Project Execution Plan (PEP) is a required baseline project document that establishes roles and responsibilities, and describes in detail the manner in which a project is to be managed and executed. The PEP is also the primary agreement between the Headquarters Program Officer and the Field on project planning and objectives, and is to be prepared, submitted, and approved by Critical Decision-2, Approve Performance Baseline. The PEP and the project Acquisition Strategy should be developed at the same time and should be synchronized. The following sections provide an example of what information is to be included in a PEP. Each PEP should be tailored to the needs of the project.

1.0 INTRODUCTION

A preliminary PEP is initially developed and issued during conceptual design, approved by the Acquisition Executive and submitted in support of Critical Decision-1, Approve Alternative Selection and Cost Range. The PEP documents the management basis and philosophy to be used throughout a project. The PEP also serves to integrate project activities by providing descriptions of:

- Why a project is needed; what DOE requirement(s) will the project meet?
- What is needed (scope and scope-of-service baseline)?
- How much will the project cost (cost baseline)?
- When will the project be complete (schedule baseline)?
- How will the project be managed and completed?

A stand-alone PEP that meets the content requirements of a PEP is generally required. For smaller, simpler projects, a generic document or even the application of an existing PEP may prove sufficient. However, prior to using either a generic or existing PEP, the approval of the project director (PD) and the appropriate Program Office is obtained. Topics (elements) that must be addressed in a PEP may be tailored to the needs of a project, based on project size, cost, and complexity. Individual PEP elements may be determined to be “not applicable” for a particular project, or may be addressed by reference to another document. If this is the case, then this is addressed and explained in the PEP. That is, required elements are not to be ignored.

The intent of a PEP is to provide communication and documentation (evidence) that applicable management principles and practices have been sufficiently addressed to provide predictability

and adequate management control of a project. As a project evolves, the PEP is used and, as necessary, maintained current through a controlled revision process. The final PEP is to be prepared and submitted in support of Critical Decision-2, Approve Performance Baseline, and an updated PEP is to be submitted to support Critical Decision-3, Approve Start of Construction.

2.0 PROJECT EXECUTION PLAN ELEMENTS

The following elements are to be addressed, on a tailored basis, in each project's PEP, as identified and described in the following paragraphs.

- Mission Need Statement

  Mission need is determined and documented during project pre-acquisition planning. The PEP should refer to existing pre-acquisition need documentation and/or summarize that documentation (see the Practice on Mission Need). This element should clearly summarize why the project is needed, how it can support the DOE's mission, and how the project can best provide the needed products. It should also identify and discuss alternative courses of action, and the project's preliminary technical schedule and cost ranges. A description and discussion of key, top-level project objectives should also be included.

- Acquisition Strategy

  The Acquisition Strategy should describe how the project as defined is consistent with the DOE's strategic goals, plans, and objectives, and how it meets those goals, plans, and objectives cost effectively and efficiently (see the Practice on Acquisition Strategy). The strategy for acquiring the desired products should be defined: competitive bids, M&O/M&I, privatization, and performance-based, incentivized contracts. A brief justification of how the method selected best meets DOE needs should be included. The method of selecting principal project participants, as well as their interfaces and relationships should be described. The technical, business, and management processes that will define the acquisition process should also be addressed. As appropriate, the Acquisition Strategy should also include discussions of competition, source solution procedures, risks, tradeoffs, interfaces, and delivery/performance milestones. For an outline of the contents of an Acquisition Strategy, see Manual Section 5.4.1.

- Scope Description

  The scope description summarizes the preferred configuration (scope of facilities) that evolves from the conceptual design process to satisfy established performance requirements and acceptance criteria. The description should also identify key performance requirements, siting location and development information, as well as major equipment, processes, and design concepts that will be used. In addition, the scope description contains a summary of services that are required during the Execution phase to control the

project. The scope of services should reference (as appropriate) other sections in the PEP (e.g., design, licensing and permitting, design reviews, quality assurance, documentation and records management). The scope description should document the final basis for design (including technical performance capability and acceptance criteria) that is developed during the conceptual design process.

- Project Organization, Roles, Responsibilities

  The execution strategy for the project should be described, including an organization chart that identifies the various project participants and graphically displays interfaces and reporting relationships. The execution strategy should be consistent with the scope description. Organization charts may include, as appropriate, DOE-Headquarters, DOE Field/Operations Office, major contractors, and major subcontractors. Functional responsibilities within a participant's organization should be shown as appropriate. Participant roles, responsibilities, authorities, and accountabilities should be described. The Integrated Project Team (IPT) should be described, including members and individual roles and responsibilties. The organizational structure, interfaces, functional responsibilities, and levels of authority need to be consistent with the content of the Acquisition Strategy and the Quality Assurance Program. Management activities that need to be performed prior to the start of the Execution phase (e.g., develop statement of work for definitive design services) also need to be described.

- Performance Baseline and Key Parameters

  The Performance Baseline includes the three primary elements (baselines) which define the project: (a) a scope baseline or the performance capabilities the project must provide to meet the mission need, (b) the schedule baseline or the time within which the project is to provide the necessary capabilities, and (c) the cost baseline or the total cost of providing the necessary capabilities on the identified schedule. These elements or parameters evolve and develop over time, but are formally established at Critical Decision-2, Approve Performance Baseline. The Performance Baseline parameters include both the objectives the project is expected to meet, as well as the thresholds or the minimum acceptable project deliverables. Key Parameters are the characteristics, functions, requirements, or design bases that, if changed, have a major impact on the ability of the project (or an interfacing project) to meet its mission requirements. Parameters that are appropriate for Key Parameters are those that define performance in terms of how well a structure, system, or component will perform—capacity, capability, rates, purity, etc. Additional Key Parameters are those that define the project's schedule and cost performance—decision points, major milestones, initial operation, project closeout; and total project cost, total estimated cost, and other project costs.

- Resource Requirements

The resources needed to perform and complete the project should be identified and discussed. These resources include external support; other organizations (internal and external); site access requirements; utility requirements, including the need for new or expanded systems; permits; technical support personnel by type and number; craft labor needs by type and number; transportation needs; etc. Controlling, handling, packaging, transportation, and disposal of wastes should also be addressed. The discussion of resource requirements/needs should include the project life cycle from Initiation to Start of Operations/Closeout. If desired, the project's schedule and cost ranges may be included.

- Procurement and Contracting

  The planned procurement and contracting strategy should be described, including awarding contracts for services on materials, and inspection, acceptance, and storage receipt of materials, and equipment. The procurement and contracting strategy should be consistent with the overall execution strategy. All procurement and contracting activity should be consistent with the applicable Quality Assurance Program. Constructions having a total estimated cost of $2,000 or more may also require a Davis-Bacon Review.

  In developing the procurement and contracting strategy, a key objective must be to provide best value to the Government. The procurement and contracting approach that is developed and implemented should be included, as appropriate, in all subcontracts and passed on to all subcontractors, particularly performance reporting.

  In selecting the contracting method(s) to be used (fixed price, incentivized, cost plus), the type of work to be performed and the associated risk should be considered. Consideration should also be given to the capacity, capability, and experience of the contract administration staff to support and effectively manage the type of contract proposed.

  If high-value or long-lead acquisitions are planned, the PD/Project Manager (PM) should determine if a pre-procurement plan is required, and if so, what approvals are necessary. Long-lead and special procurements may also require an early or partial Critical Decision-3, Approve Start of Construction.

- Integrated Safety Management

  A key component of a successful project is to ensure that safety, health, environmental, and quality issues are addressed early in a project's life cycle, and fully integrated into all project activities (see the Practice on Integrated Safety). An Integrated Safety Management system is most effective when developed early and applied to all project activities. This leads to a safety-first philosophy, and the premise that accidents are preventable through early and close attention to safety. A major element of Integrated Safety Management is that safety should be designed into a project/process when a unique opportunity exists to eliminate or minimize hazards and incorporate cost-effective accident prevention and mitigative features. Management of safety functions and activities, and protection of the workers, the public, and the environment, becomes an integral part of mission

accomplishment, and a key responsibility of the IPT. This element should describe how the Integrated Safety Management philosophy is being applied to the project to maximize protection of workers, the public, and the environment.

Specific items that should be addressed in the Integrated Safety Management section include:

— Define line management responsibilities for safety.

— Establish clear roles and responsibilities for project participants to ensure that safety is integrated into design, and adequate safety planning is developed and maintained.

— Ensure project participants possess the knowledge, skills, background, and experience to meet their safety responsibilities.

— Identify and understand all applicable safety standards and requirements to accurately recognize and control hazards.

— Describe how tailoring has assured facility safety controls and systems are appropriate to prevent and mitigate hazards.

- Systems Engineering/Value Management

  Systems engineering is a tool to assist the PD/PM in organizing, managing, and documenting a project. The primary goal of the systems engineering process is to transform mission operational requirements into system architecture, performance parameters, and design details.

  The systems engineering element should identify the top-level deliverables and/or functions that have been defined. The iterative process of breaking down these top-level deliverables or functions into successive levels or sub-functions, and the integration of these sub-functions into the Work Breakdown Structure should also be described, and when performed, fully documented. The individual(s) responsible for performing this effort should be identified.

  The requirements analysis process describes the necessary and sufficient set of performance requirements, design constraints, and interface requirements for each function, and when performed, is fully documented. The individual(s) responsible for performing this effort should be identified.

  Value management is a specific type of formal alternative study that follows a prescribed methodology or plan. A Value Management study is specifically intended to identify solutions that improve upon design features relative to an established baseline. The Value Management process that will be used by the project (should a Value Management study be required) should be described, and the responsible individual identified. This description should include the qualifications of the Value Management-trained individual who would lead the study, the minimum qualifications of Value Management team

members, and the minimum documentation expected from a Value Management Study. The Value Management process (to be of the most value) should be applied early in a project's life cycle to identify alternative, cost savings approaches for the project's design elements.

- Risk Management

  An assessment of risks that threaten successful execution of a project is usually performed during the Definition phase. Examples of the types of activities that are typically identified as having risk potential and that should be evaluated include:

  — New technology

  — Like-for-like replacement

  — Complex design

  — New design basis accident or unreviewed safety question

  — Dependence on other facilities

  — Few qualified vendors

  — Aggressive schedule

  — Inadequate budget

  — Fast tracking.

  Identified risks should be documented and assigned to a responsible individual for resolution along with a completion date. Each risk should be tracked to closure.

  Results of the risk assessment should be included in the PEP. If high risks are identified, they should be quantified, analyzed, and eliminated or mitigated. When needed, a Risk Management Plan will be developed and included. Results of the risk analysis should also be considered when establishing cost and schedule baselines.

- Quality Assurance

  The Quality Assurance Program (QAP) for a project should be referenced or included in the PEP (see the Practice on Integrated Quality). The Quality Assurance Program is developed based on the importance of the work to be done and the requirements to be met (tailored). The processes (with roles and responsibilities identified) that are in place to assure that quality assurance requirements associated with design, procurement, and construction are identified and implemented should be described. Quality and reliability objectives should be identified.

  If available, SSE quality and safety levels should be included. Processes to verify that work is correctly performed or, if unacceptable, corrective actions should also be described. Most projects will have a specific Quality Assurance Program. Projects should

be evaluated case-by-case to determine if existing approved Quality Assurance Programs are sufficient. Quality Assurance Programs are prepared during the Definition design phase.

- Research and Development, Test and Evaluation, Alternative Studies, Trade Studies

  The status of research and development (R&D) and its potential risks to the project should be described and defined. A proposal for completing research and development within project cost and schedule requirements should also be described. A 'what if' scenario (including alternatives) should be prepared, were the research and development effort not to achieve the expected results. The entity responsible for research and development should be identified, along with responsibilities, objectives, major milestones, and reporting requirements. The process for performing tests, evaluations, alternative studies, and trade studies should be described. Of particular importance is a description of the review and approval process for these efforts. Responsible individuals should be identified along with expected completion dates.

- Design/Design Reviews

  The project design effort (pre-acquisition, conceptual, preliminary, final) is one of the most important activities in a project's life cycle. This is because all follow-on activities and actions (scope, schedule, and cost) are based on the products of the design effort. Experience has shown that perceived savings in performing designs and design reviews generally result in increased schedules and costs during construction, checkout, turnover, startup, and operation. Therefore, the importance of this effort cannot be over-emphasized.

  The scope and method of performing design activities should be summarized, including a description of how the required activities will be managed and controlled. The following are examples of design topics that may need to be addressed, depending on the scope of the particular activity:

  — Development of a design statement of work
  — Facility technical scope/basis for design
  — Design work plan
  — Design performance measurement and progress reporting
  — Drawing, specification, calculation, and documentation requirements
  — Applicable design codes and standards
  — Interface control with existing systems/facilities
  — As-built drawing requirements
  — Interpretation of engineering documents
  — Field engineering and design support

- Outline specifications
- Decision-making criteria/evaluation attributes
- Human factors engineering
- Rigging/transportation
- Reliability, operability, and maintainability review
- Constructability and operability review
- Testability reviews, including NDE
- Design verification
- Construction and acceptance testing and evaluation
- Scheduling and cost estimating
- Inputs to be provided to the engineer/designer
- Walk-downs of existing facilities/field investigations
- Essential nuclear systems
- Nuclear safety analysis and safety questions
- As Low As Reasonably Achieveable (ALARA), life cycle approach to radiation exposure, contamination, and radiological waste
- Non-conformance reports
- Energy conservation analysis
- Vendor data
- Incentives for performance
- Inspection, test, status and acceptance.

Properly conducted design reviews can add value to the design process by providing unbiased outside expert opinion and by documenting that reasonable efforts have been made to implement design optimization. Design reviews are not a substitute for integrated, competent design, and should not be used to compensate for an incomplete statement of work that lacks comprehensive design requirements definition. With few exceptions (e.g., value management), design reviews should be conducted against a specified standard or requirement. Care should be taken to avoid using design reviews as a mechanism to promote an unfocused “design by committee” approach.

The design review plan (for preliminary and detailed design) should be described, including a discussion of responsibility for conducting reviews, documenting, and responding to review comments, and the process for taking action—based on review

results. The authority to establish review hold points should be addressed. The use of prepared design review checklists as guidance for the design review process is encouraged. Examples of possible areas of design reviews include:

— Conformance to the final basis for design (technical baseline document)

— Alternative systems

— System functions and requirements

— Operability / human factors

— Maintainability

— Constructability

— Testability

— Radiological (ALARA)

— Fire protection

— Environmental compliance

— Hazardous material storage

— Waste minimization/pollution prevention

— Reliability

— Availability

— Format of design media (e.g., drawings, specifications, calculations).

All design review activities should be thoroughly documented, and all reviewers and project participants informed of design review decisions. All review comments should be resolved with the reviewer and documented as closed. Design review documents should be retained in the project files. The processes and methods of performing these activities should be documented in the design review plan. The method and process for assigning design review responsibilities, training, and retaining design review teams should also be documented.

- Work Breakdown Structure and Dictionary

  A copy of the project Work Breakdown Structure (see the Practice on Work Breakdown Structure) and dictionary should be included. The Work Breakdown Structure should be comprehensive and contain sufficient levels to divide project work into manageable segments. The Work Breakdown Structure forms a common framework for integration of all project tasks. The Work Breakdown Structure and dictionary are structured to support the physical construction effort and facilitate:

  — Explicit scope description/definition

- Clear responsibility for all work
- Planning, budgeting, and scheduling
- Performance measurement
- Communication and information reporting
- Common framework for task integration
- Status and performance reporting.

The Work Breakdown Structure dictionary details the content of each Work Breakdown Structure element through (at least) the control account level.

- Performance Baseline Definition and Control

  The performance baseline is comprised of the integrated scope baseline (both facilities scope and services scope), schedule baseline, and cost baseline. These baselines are the basis for project performance evaluation and reporting.

  Include a list of completion milestones and major progress milestones with dates. Also include the Total Estimated Costs, Other Project Costs, and Total Project Cost (TEC + OPC = TPC). Provide a description of how the performance baseline will be used as a management tool during the Execution phase to monitor progress, and measure and report project performance and status.

  A description of the baseline change management and control processes that will be used (including control of the final basis for design) should be included. The performance baseline is maintained under formal change control.

- Performance Measurement, Reporting, and Forecasting

  Describe how the performance baseline (i.e., scope, schedule, cost) will be used during the project Execution phase to measure performance. Include a discussion of the frequency of measuring performance, and describe the various routine analysis methods that will be used (e.g., cost variance, schedule variance, critical path analysis, float calculation, trend analysis) to evaluate the information and to identify corrective actions. Include primary graphic indicators (i.e., metrics) that can be used as management tools during the Execution phase, and a description of how they can be used to control work. A sample monthly project status report format should be included. The sample should include an executive summary, monthly and project-to-date schedule and cost performance information (actual condition compared to planned condition), fiscal year-to-date schedule and cost performance, the current estimated project completion date based on critical path analysis, and a current forecast of cost at completion.

  For most projects, a periodic (e.g., quarterly) probabilistic assessment of achieving remaining cost and schedule objectives should be conducted and the results of the

assessment summarized and included in the executive summary of the monthly progress report. Simulation analysis methods (e.g., Monte Carlo) usually identify and focus on critical elements. For each critical element a probable range and frequency curve is developed. This information allows development of a statistical model, which yields the required confidence level (e.g., 90%) of achieving remaining project cost and schedule baseline objectives. If milestones or contractual performance agreements are associated with the project, their status and an assessment of the probability of their being achieved should be included.

The PD/PM should determine frequency and content of monthly and/or quarterly project review meetings. The format for the meetings should be included and formal construction project monthly reports should be scheduled to support monthly project overviews. As a general rule, material presented at the meeting should not require special preparation but should be used as management tools and information to control the work. The meeting should present current period and project-to-date performance information and should focus on future events and not on past accomplishment. Care should be exercised in presenting new or controversial project issues at review meetings. Issues may be more effectively resolved in special meetings with limited attendance.

- Life Cycle Cost

  The life cycle cost analysis that was conducted during the pre-acquisition activities should be included and summarized, or referenced. The update to the life cycle cost analysis that is performed when the conceptual estimate is prepared should also be included or summarized. The life cycle cost estimate should identify all applicable assumptions. A risk-based allowance should be calculated and included.

- Cost Control

  A description of the methods that will be used to measure cost performance should be provided. The approach to cost control should be described including methods for control of project management, design, procurement, construction, start-up, and turnover efforts.

- Funding

  A description of the funds management plan for the project should be included. The funding plan should describe the approach that will be used to assure an adequate flow of funds to the project, and to manage expense and capital funds to support planned progress. All estimates and funding needs should be risk based. Depending on the scope and execution approach for the particular project, typical areas that may be addressed in the funds management plan include:

  — Expense funds

  — Design (Project Engineering and Design) funds

  — Procurement funds

- Construction funds
- Escalation
- Risk-based allowances.

- Environmental, Licensing and Permitting Strategy (NEPA, etc.)

  Environmental compliance is critical to successful projects. A summary of actions taken to integrate relevant environmental requirements and values into the project should be included. For major projects, include a description of environmental management systems and engineering controls that have been established to address environmental issues. The National Environmental Policy Act includes a description of how environmental factors are considered in the decision-making process to ensure that decisions reflect environmental values. The environmental analysis that identifies applicable Federal, state, and local statutes that affect the project should be included. (The analysis typically includes the environmental requirements checklist that is prepared early in the Definition phase.) For formal construction projects, the environmental portion of the licensing and permitting plan and schedule should be included.

- Site Development/Temporary Facility and Services Plan

  If the construction activity requires site development and/or temporary facilities and services, then a description should be included. If the scope of site development (or temporary facilities and services) is significant, then a plan and schedule should be provided that is an integrated part of the project schedule. This plan should also include the results of a utility needs/availability survey, and identify any necessary utility upgrades, including emergency, standby, back-up, and uninterruptible power.

- Safeguards and Security

  A description of the safeguards and security measures that are to be implemented during the Execution phase should be included.

- Configuration Control

  A description of the configuration control process that will be implemented should be included. The described process should be consistent with the approved configuration management implementation plan. For large or complex projects, the PD/PM may choose to develop a project-specific configuration management plan.

- Document and Record Management

  A description of the document control and records management systems that will be implemented should be included. The described systems should be consistent with and integrated with the configuration management process and should address:

- Identifying, issuing, collecting, filing, reproducing, distributing, and controlling revisions of project documents and subcontractor/supplier generated data.
- Protecting, retaining, retrieving, and storing documents and records for the required duration.
- Generation and retention of sufficient records to accurately reflect completed work and demonstrate compliance with applicable requirements.
- Record turnover and disposition at project completion.

- Inspection, Test, Evaluation, Turnover/Acceptance, and Start-Up Plan

  The preliminary or draft PEP (issued during the Definition phase) should provide an outline of test/turnover activities that will be developed during the early portion of the Execution phase as design details become available. The outline should address the approach to the following, as appropriate:

  - The construction inspection organization, including roles, responsibilities, authorities, and independence. A construction inspection plan should identify inspection, testing, and documentation requirements (including hold points, acceptance criteria, and evaluation of inspection and test results) for material, equipment, and construction processes.
  - The process and approach for jurisdictional turnover (from construction to start-up, and from start-up to operation), and acceptance should be included. System care, custody and control is to be continuous throughout the transition to operations.
  - A start-up plan that addresses readiness and logic as well as schedule.
  - An Acceptance Inspection Plan. Acceptance inspection is the construction inspection/testing and source inspection/testing of construction workmanship, materials, and equipment on behalf of the Government for the purpose of evaluating conformity or non-conformity to approved drawings and specifications. Acceptance inspection serves as an agent for the PD/PM, contracting officer technical representative, and contracting officer, and, therefore is not a substitute for, nor a part of, nor able to fulfill, the contractor's quality assurance/quality control responsibilities. An Acceptance Inspection Plan should be prepared prior to the initiation of construction.

- Procedures/Procedure Development

  Project specific procedures may be required to promote communications and to provide adequate control. If a project-specific procedures manual is to be developed and used, the initial issue of the PEP should contain an index of those procedures. The index will be updated as the project progresses and procedures evolve.

If projec-specific technical procedures are developed, they are to conform to local requirements. Examples of possible topical areas and specific procedures that may be developed include:

- Project Administrative Control:
  - Preparation, use, and control of project specific procedures
  - Correspondence—internal and external
  - Information systems
  - Control and revision of the PEP.
- Design:
  - Field construction design
  - Spare parts list
  - Proposed modifications for constructability
  - Field interface with Architect/Engineer
  - Configuration management.
- Planning and Scheduling:
  - Equipment status report
  - Change control
  - Plan and schedule revisions.
- Job Site Safety:
  - Safety orientation
  - First aid
  - Accident reporting
  - Fire protection/prevention.
- System Completion, Testing, and Turnover:
  - Preparation, use, and control of test procedures
  - System designation/identification for completion, testing, and turnover
  - System documentation package
  - System punch list development and control
  - System turnover and jurisdictional control
  - Training.

- A description of the training requirements and the project's training program should be included. Also, any required licenses and certifications should be identified and addressed. The responsibility for project and user personnel training should be included, and should emphasize the user of the project team in the user training effort. The preparation and maintenance of training plans and procedures, and training records should be described.

3.0 PROJECT EXECUTION PLAN APPROVAL

Each PEP is submitted to the Acquisition Executive for approval as part of Critical Decision-2. A sample approval form is shown in Figure 1.

Document (indicate draft/final): _____

_____

Project Title/Number/Date: _____

_____

Document Approvals:

Project Director: _____ Date: _____

Field/Operations Office: _____ Date: _____

Program Manager: _____ Date: _____

Program Office: _____ Date: _____

SAE/AE: _____ Date: _____

Figure 1. Sample Project Execution Plan Approval Form

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ATTACHMENT 1

DOE/ORP-2000-06
Revision 2

River Protection Project - Project Management Plan

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

P.O. Box 450
Richland, Washington 99352

RIVER PROTECTION PROJECT – PROJECT MANAGEMENT PLAN

Approved by:

10/30/01

Harry L. Boston, Manager
Office of River Protection

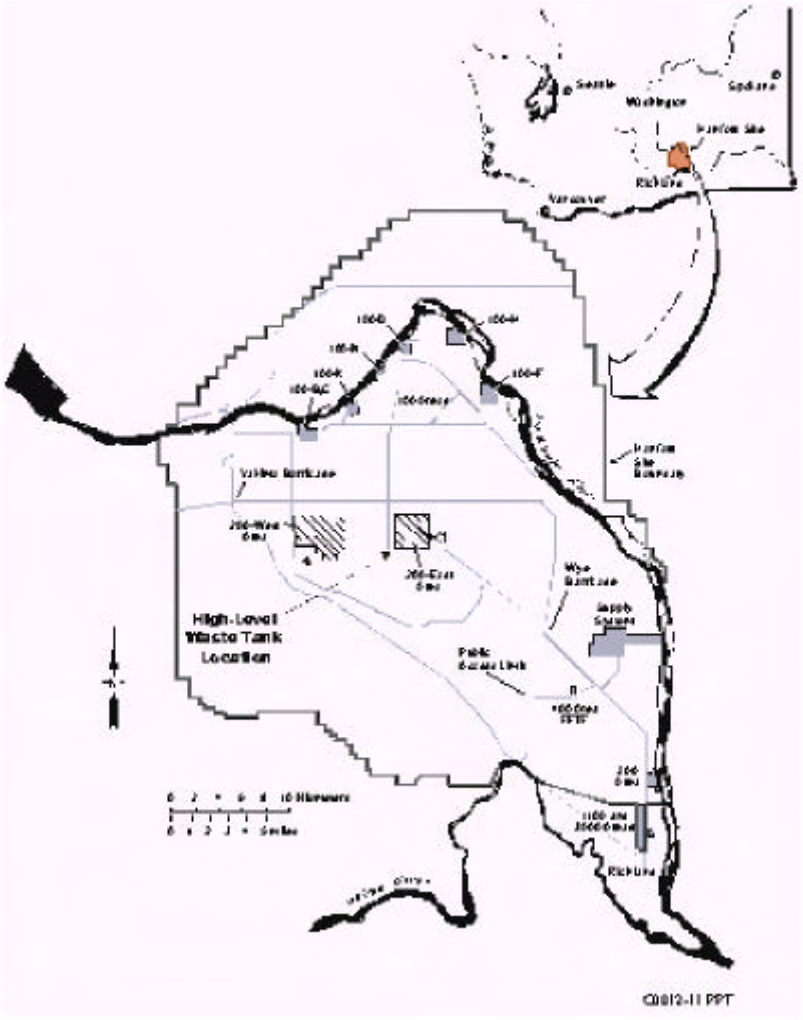
Date

EXECUTIVE SUMMARY

As directed by Congress in Section 3139 of the *Strom Thurmond National Defense Authorization Act for Fiscal Year 1999*,[1] the U.S. Department of Energy established the Office of River Protection (ORP) at the Hanford Site in eastern Washington State to manage the River Protection Project (RPP) (formerly the Tank Waste Remediation System), which is the Department's largest and most complex environmental cleanup project.

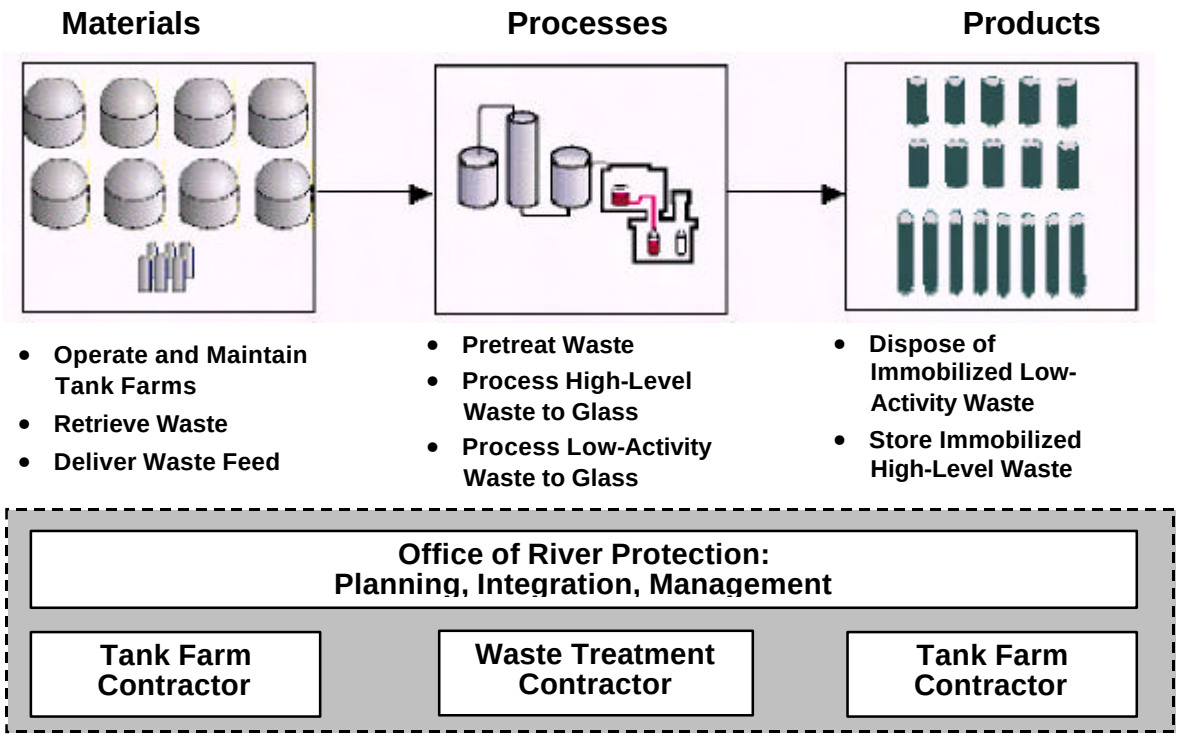
The ORP is responsible for managing 54 million gallons of highly toxic, high-level radioactive waste stored in 177 underground tanks located within seven miles of the Columbia River. One hundred forty-nine of these tanks have a single steel liner inside the concrete tanks and are decades beyond their design life. Sixty-seven have leaked an estimated one million gallons of waste into the soil. Some of this waste has reached the groundwater, threatening the Columbia River. It is urgent that this waste be removed, treated (turned to glass or vitrified) and stored or disposed of in a more secure location before more leaks occur and before tanks and infrastructure deteriorate to the point where the cost and schedule for cleanup become prohibitive. Figure ES-1 shows the location of the waste storage tanks with respect to the Columbia River. This nuclear waste is the result of more than 40 years of reactor operations and plutonium production for national defense. The cleanup of this legacy waste is now a national priority and part of closing the circle on the nuclear weapons production cycle. The project schedule and technical approach are driven by regulatory requirements and commitments.

Figure ES-1. Location of Tank Waste at the Hanford Site.



The mission of the RPP is to build and operate a Waste Treatment Complex to complete the cleanup of the Site's highly radioactive tank waste (Figure ES-2). This cleanup must occur in an environmentally sound, safe, and cost-effective manner. The cleanup also must comply with the *Hanford Federal Facility Agreement and Consent Order*[2] (also known as the Tri-Party Agreement), an agreement among the U.S. Department of Energy, the U.S. Environmental Protection Agency, and the Washington State Department of Ecology, signed on May 15, 1989. This agreement describes the actions and timetable necessary to achieve compliance with the *Comprehensive Environmental Response Compensation and Liability Act of 1980*[3] and the *Resource Conservation and Recovery Act of 1976*

Figure ES-2. The Waste Treatment Complex and Contracting Approach.



The RPP is managed as a single integrated project with two prime contractors conducting the work and the ORP providing planning, management, and integration. The ORP Manager reports to the Assistant Secretary for Environmental Management at DOE-Headquarters. He is responsible for successfully executing the RPP, and coordinates Hanford Site activities with the Manager, RL.

Management systems are being put in place to provide the structure, plans, and procedures to manage this large, complex project with rigor and discipline:

- An RPP baseline has been established and is under configuration control.
- Interfaces have been defined and are being controlled.
- Project performance is being measured and corrective actions developed for problem areas.
- Safety, health, environmental, and quality assurance programs ensure compliance with requirements.
- Project activities are being openly communicated with project participants, stakeholders, and the public.

The RPP estimated cost is approximately $35 billion unescalated ($52 billion escalated) and the schedule is to complete the project in 2046. Project success requires the estimated cost to be reduced and the schedule shortened. This will be achieved by developing better

technology, improving facility design and operating efficiencies, and using a risk-based strategy for tank closure.

This Project Management Plan describes how the ORP manages the RPP, specifically it:

- Summarizes the project scope, schedule, and cost
- Describes the ORP organization and responsibilities
- Describes how ORP will manage, control, and integrate the project and its prime contractors
- Identifies other documents that further define the project and management systems.

This Project Management Plan meets the requirements of DOE O 413.3, *Program and Project Management for the Acquisition of Capital Assets*, Chapter 4, "Project Execution Process."[5] The contractors will prepare project execution plans.

CONTENTS

APPENDICES

FIGURES

TABLES

TERMS

AMI&C	Assistant Manager for Integration and Control
AMO	Assistant Manager for Operations
AMPD	Assistant Manager for Project Delivery
AMSQ	Assistant Manager for Environment, Safety, Health and Quality
AMSR	Assistant Manager for System Requirements
BMA	Office of Business and Administration
BNI	Bechtel National, Inc.
CA	construction authorization
CD	critical decision
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CHG	CH2M HILL Hanford Group, Inc.
DEAR	Department of Energy Acquisition Regulation
D&D	decontamination and decommissioning
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DOE-EM	U.S. Department of Energy, Office of Environmental Management
DOE-HQ	U.S. Department of Energy-Headquarters
DST	double-shell tank
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ES&H	environment, safety and health

FAR	Federal Acquisition Regulation
FRAM	ORP M 411.1-1, *Safety Management Functions, Responsibilities, and Authorities Manual for the U.S. Department of Energy, Office of River Protection*
FY	fiscal year
HCA	Head of the Contracting Activity
HLW	high-level waste
ICD	interface control document
IHLW	immobilized high-level waste
ILAW	immobilized low-activity waste
ISE	initial safety evaluation
ISM	integrated safety management
ISMS	Integrated Safety Management System
LAW	low-activity waste
LCA	limited construction authorization
MARR	DOE/ORP-2000-10, *River Protection Project Mission Analysis and Requirements Report*
MOA	memorandum of agreement
MOU	memorandum of understanding
OA	operating authorization
OECM	Office of Engineering and Construction Management
ORP	Office of River Protection
OSR	Office of Safety Regulation
PMP	Project Management Plan
PQA	product quality assurance
QA	Quality Assurance
RL	U.S. Department of Energy, Richland Operations Office
RPP	River Protection Project
SA	standards approval
SOW	Statement of Work
SRS	Savannah River Site

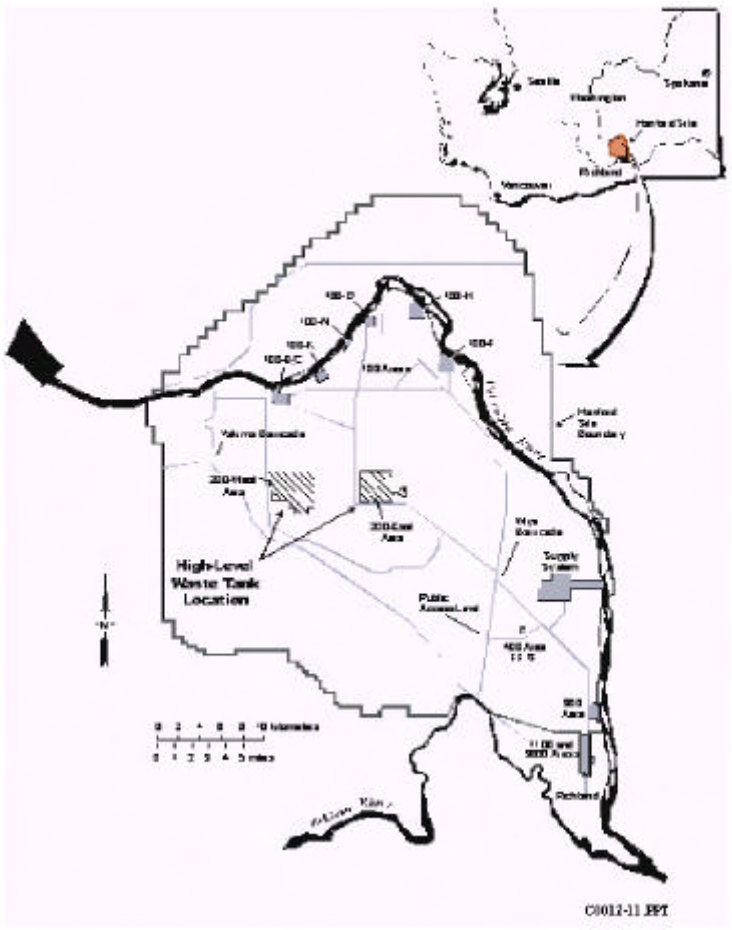
SST	single-shell tank
TFC	Tank Farm Contractor
Tri-Party Agreement	Hanford Federal Facility Agreement and Consent Order
TSCA	*Toxic Substances Control Act of 1976*
WBS	work breakdown structure
WDOH	Washington Department of Health
WTC	Waste Treatment Complex
WTP	Waste Treatment and Immobilization Plant
WTPC	Waste Treatment and Immobilization Plant Contractor

1.0 INTRODUCTION

This Project Management Plan (PMP) describes how the Office of River Protection (ORP) plans to manage the River Protection Project (RPP) to clean up the Hanford Site high-level radioactive tank waste. The Plan describes the RPP scope, schedule, and cost; the institutional setting within which the project must be completed; and the processes and structure for managing the project.

The Hanford Site, in southeastern Washington State, has one of the largest concentrations of radioactive waste in the world, as a result of producing plutonium for national defense for more than 40 years. Approximately 54 million gallons of waste stored in 177 aging underground tanks represent major environmental, social, and political challenges for the U.S. Department of Energy (DOE). These challenges require numerous interfaces with state and federal environmental officials, Tribal Nations, stakeholders, Congress, and the U.S. Department of Energy-Headquarters (DOE-HQ). The cleanup of the Site's tank waste is a national issue with the potential for environmental and economic impacts to the region and the nation. Figure 1-1 shows the location of tank waste at the Hanford Site.

Figure 1-1. Location of Tank Waste at the Hanford Site.



Because of the high cost of this project, strong Congressional support is essential to carry out this vital mission in compliance with regulatory requirements and commitments. To date, Congress has been supportive. It has provided funding and mandated the creation of a focused organization to carry out this project. However, appropriation of cleanup dollars is, and will continue to be, an important issue. The support of future elected officials and a nationwide commitment to this project are essential.

To this end, the DOE, in accordance with the Congressional mandate of the *Strom Thurmond National Defense Authorization Act for Fiscal Year 1999*, established the ORP to successfully execute and manage the RPP, formerly known as the Tank Waste Remediation System. Current mission execution plans are to carry out the project under two segments. In the first phase, called Initial Quantity (or Phase 1), 10 percent of the Hanford Site tank waste by mass and 25 percent by radioactivity will be treated and immobilized. The next phase, included in the Balance of Mission (or Phase 2), will treat and immobilize the remainder of the waste, close the tanks, and transition the Site to long-term stewardship.

Long-term project success relies on investing in research and technology to reduce project uncertainties and cut costs. These investments are primarily aimed at improving the safety, performance, reliability, and capacity of the Waste Treatment and Immobilization Plant (WTP). With this goal in mind, the recently selected Waste Treatment and Immobilization Plant Contractor (WTPC) was incentivized to improve the reference technology and propose alternatives to improve the WTP performance.

This PMP describes how the ORP manages the RPP and works with its contractors to carry out this single, integrated project. The primary focus is on the ORP organization and management processes, but the PMP also references management documents of the ORP Prime Contractors (the Tank Farm Contractor [TFC] and the WTPC).

The ORP is one of two DOE field offices at the Hanford Site. The Richland Operations Office (RL) is responsible for cleaning up the environmental liabilities at the Hanford Site and overall Site management. The ORP relies on RL for administrative and infrastructure support. The ORP coordinates with RL to address Sitewide issues and for future planning.

This PMP is organized in five sections:

- Section 1.0, Introduction, describes the purpose of the document and provides a brief project background.
- Section 2.0, Mission, describes the problem to be resolved and why, and the strategy to resolve it.
- Section 3.0, Project Baseline, describes the work to be accomplished and the schedule and estimated cost for doing it.
- Section 4.0, Management Structure, Responsibilities, and Authorities, establishes the institutional and organizational structure for carrying out the RPP.
- Section 5.0, Project Management Systems, describes how the RPP is managed and controlled throughout its life cycle.

The PMP meets the requirements for a project execution plan as defined in DOE O 413.3, *Program and Project Management for the Acquisition of Capital Assets*. As accepted by the Order, the PMP was tailored to best satisfy the planning needs of a multi-billion dollar, multi-decade initiative into a concise, yet effective, communication tool. Appendix A provides a matrix that maps this PMP's compliance to DOE O 413.3 requirements for a project execution plan.

2.0 MISSION

The mission of the RPP is to store, treat, immobilize, and dispose of the highly radioactive Hanford Site waste (including current and future tank waste and cesium and strontium capsules) in a safe, environmentally sound, and cost-effective manner (*Justification of Mission Need, Hanford Site Tank Waste Remediation System to the Energy System Acquisition Advisory Board*). Another way of stating the mission given the status of the

project is, “Build and operate the tank Waste Treatment Complex (WTC) to complete cleanup of the highly radioactive tank waste at the Hanford Site.” The mission is more fully described and analyzed in DOE/ORP-2000-10, *River Protection Project Mission Analysis and Requirements Report* (MARR).

2.1 THE CHALLENGE

The Hanford Site provides storage for 60 percent of the nation’s high-level radioactive and chemically hazardous waste. The Site is the only DOE site with such waste but no capability to treat it. Current storage practices pose an environmental threat because of past and potential leaks from aging single-shell tanks (SST); 67 of 149 SSTs are suspected to have leaked. The newer double-shell tanks (DST) have a longer life expectancy, but there is insufficient capacity in the 28 DSTs to store all 54 million gallons of waste.

As shown in Figure 2-1, the 149 SSTs have exceeded their design life and the 28 DSTs will exceed their design life before treatment can be completed. Over time, water infiltration will transport chemicals and radionuclides to the groundwater and ultimately to the Columbia River seven miles away (Figure 2-2). Once the mobile chemicals and radionuclides have reached the groundwater, they could travel to the Columbia River in as few as 15 to 20 years. Protecting the river is of great importance to the Northwest and the nation.

Figure 2-1. Average Age of Tanks Compared to Design Life.

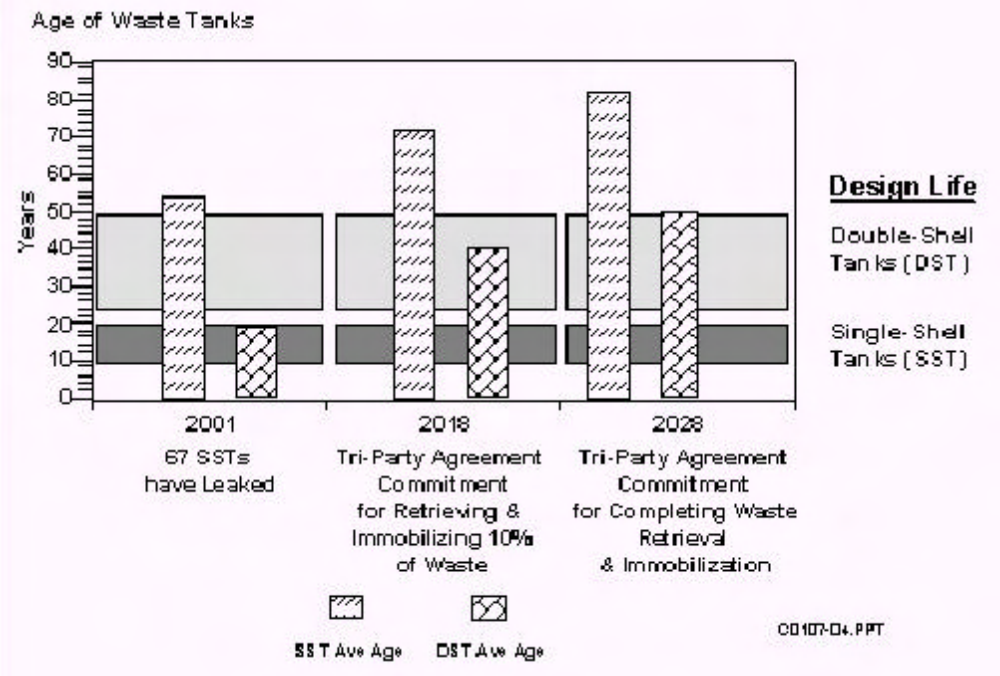
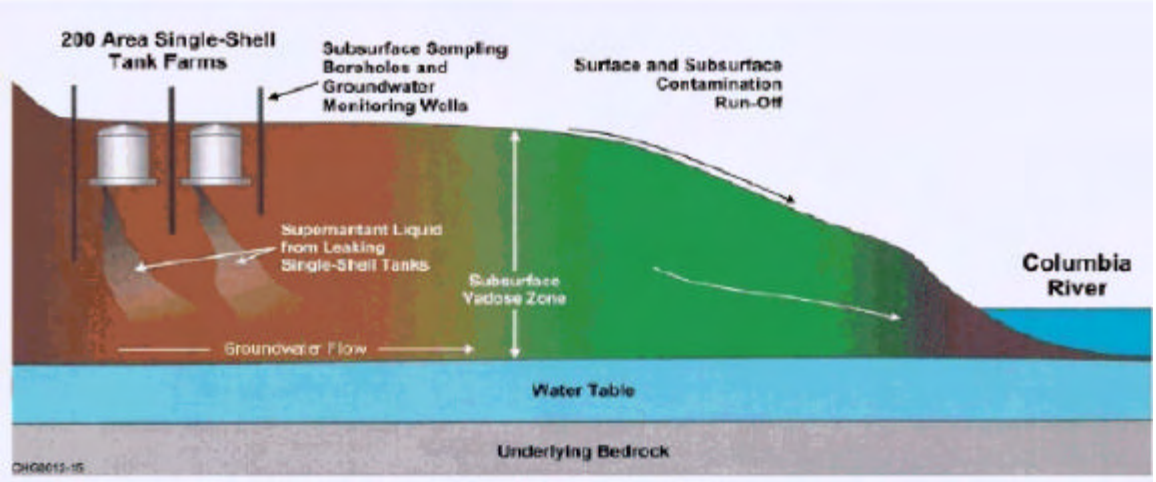


Figure 2-2. Environmental Threat of Tank Leaks



Alternatives for treating and disposing this high-level waste have been studied for more than 20 years. During this time, several attempts to provide waste treatment capability have been unsuccessful, primarily because budgets were diverted to higher priority programs. The most recent attempt was to involve commercial investment capital by privatizing the WTP. This attempt failed because of significant and unsubstantiated growth in proposed cost, and unresolved questions regarding the capability of the privatized contractor to deliver the project.

The DOE's lack of progress in acquiring the capability to treat Hanford Site waste has created an environment in which DOE's credibility and commitment are in question. The Washington State Department of Ecology (Ecology), which has *Resource Conservation and Recovery Act of 1976* regulatory authority over the project, has established legally binding dates when waste treatment actions must occur.

The DOE has made significant progress during the past several years in resolving safety issues associated with the storage facilities at the Hanford Site. A summary of this progress is documented in DOE-ORP-2000-27, *Office of River Protection 2-Year Progress Report to Congress, December 2000*. However, the commitment to treat and immobilize the waste requires a major investment. An estimated 10 billion dollars are needed during the next ten years to provide this capability, prepare to deliver waste from the tanks to the WTP and store or dispose the immobilized waste product, and to safely maintain the tank farms.

2.2 STRATEGY

The ORP strategy is to develop and manage the WTC as an integrated chemical processing facility (Figure 2-3). The WTC consists of three principal elements: (1) materials, (2) processes, and (3) products. The materials element stores the 54 million gallons of waste, and then retrieves the waste and delivers it for processing. The processes element separates the waste into two fractions, removes radionuclides from the low-activity waste (LAW), and

then immobilizes both the high-level waste and LAW by vitrification. The products element disposes the immobilized low-activity waste (ILAW) and stores the immobilized high-level waste (IHLW).

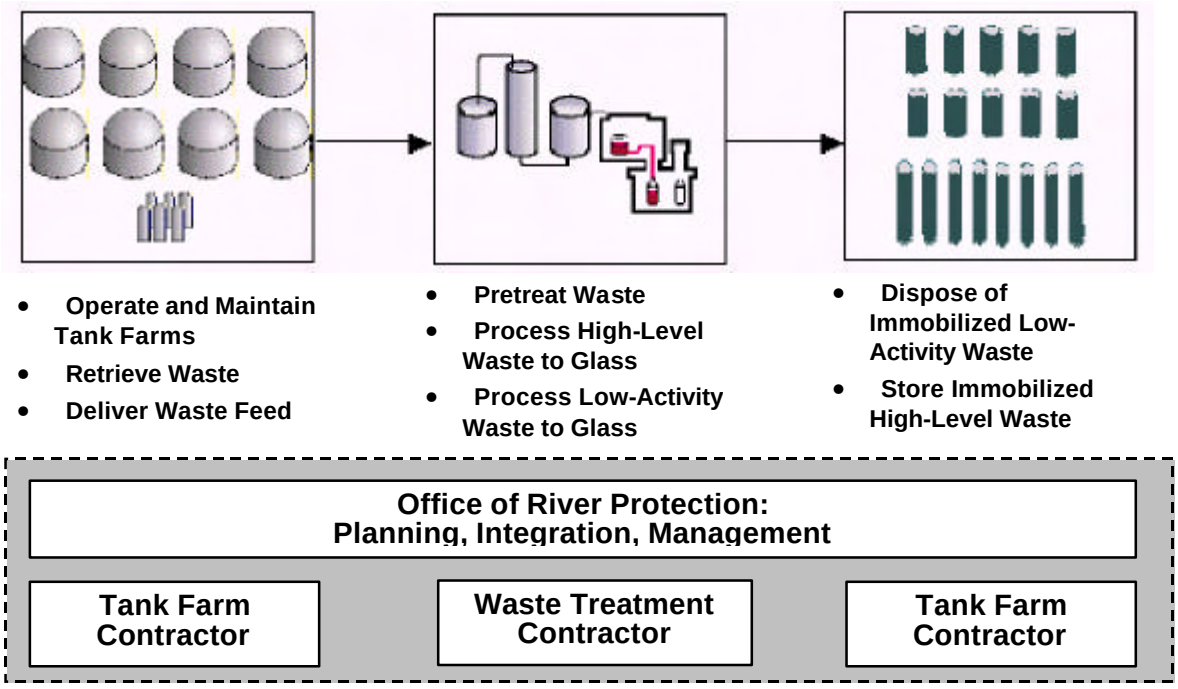


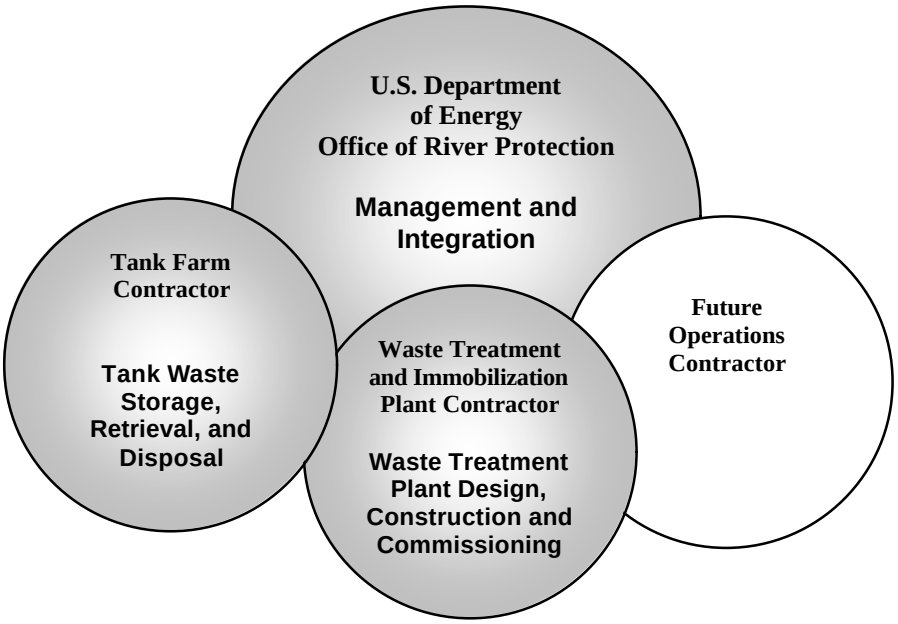
Figure 2-3. Waste Treatment Complex.

The ORP is responsible for planning, integrating, and managing the RPP. Two Prime Contractors, the WTPC and the TFC are responsible for conducting the project work. The WTPC is responsible for the processes element and the TFC is responsible for the materials and products elements.

2.2.1 Management Approach

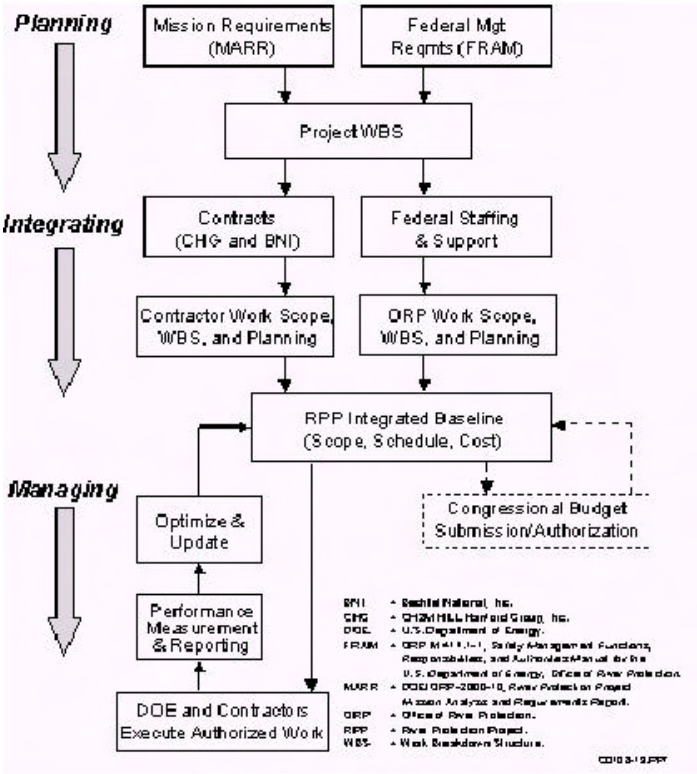
An integrated project team has been established to conduct the RPP (Figure 2-4). The ORP manages and integrates the project. Bechtel National, Inc., has the contract to design, build, and commission the WTP. CH2M HILL Hanford Group, Inc., has the contract to operate the tank farms to safely store the waste, provide waste retrieval and delivery systems, and provide immobilized waste storage and disposal systems. Both contractors are working under incentive-based contracts. Before WTP commissioning, decisions will be made regarding the best contracting approach for future operations.

Figure 2-4. Integrated Project Team.



The project work is conducted as a continuous process that starts with defining requirements, and then proceeds though developing a project baseline, executing the work, measuring performance, and making corrections as shown in Figure 2-5.

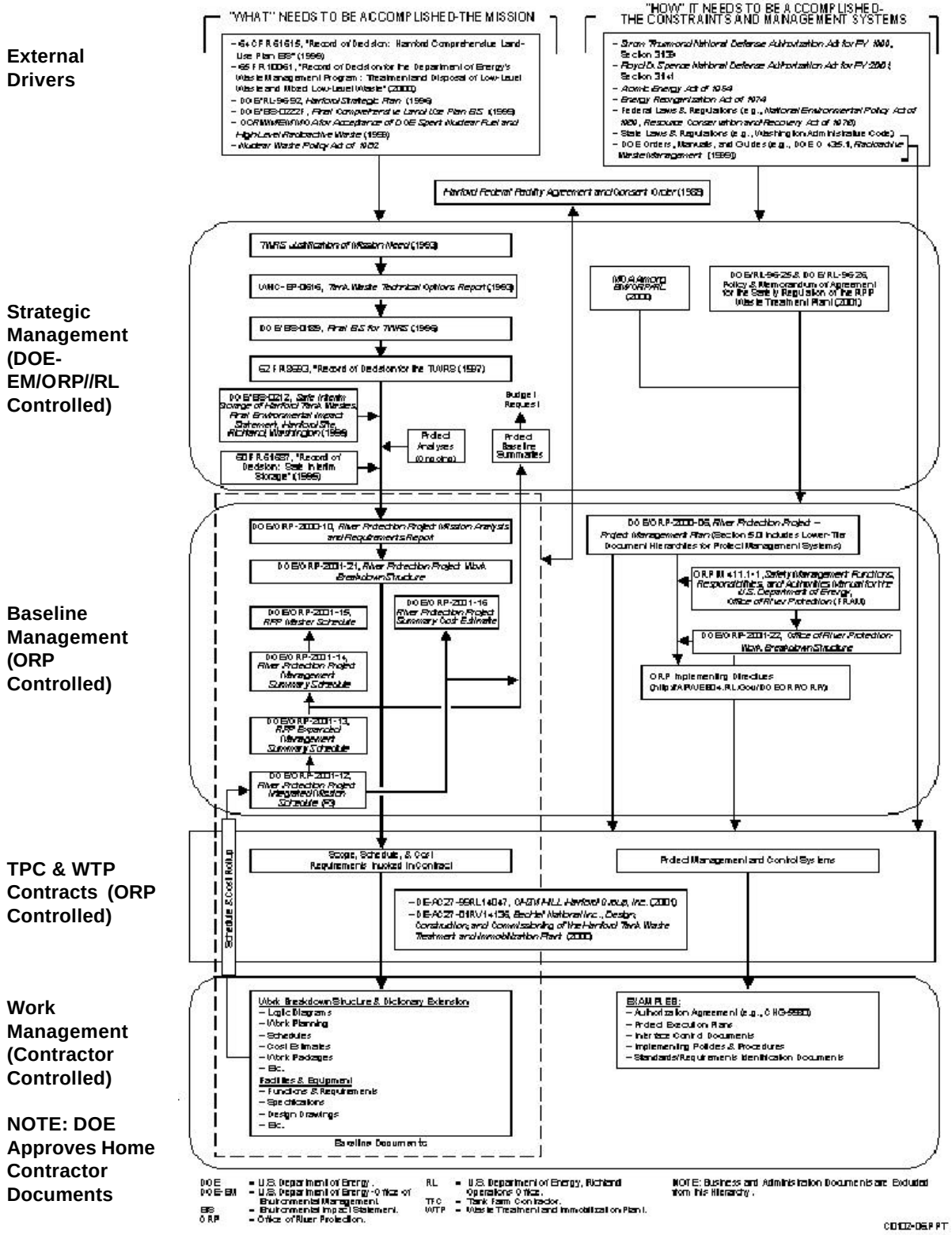
Figure 2-5. Office of River Protection Planning, Integration, and Management Process



A project management document hierarchy that identifies the primary documents used by the ORP to manage the RPP, and their higher-level source documents, is shown in

Figure 2-6. This hierarchy displays the document relationships, the major categories into which the documents can be classified for management purposes, and a mechanism for tracing requirements to lower levels of management control.

Figure 2-6. River Protection Project - Project Management System Document Hierarchy



The document hierarchy is organized into two general columns. The left column focuses on "what" needs to be done to carry out the mission and "how well" it must be done. It includes documents that define the mission, the alternatives for meeting the mission need, and selection of the alternative to be pursued. This leads to establishing the RPP baseline.

The right column focuses on "how" the project must be conducted. It includes the laws, regulations, methods, and management systems that must be followed while conducting the work.

The document hierarchy is divided into the following five sections:

External Drivers. These documents include legal, regulatory, management, and technical requirements from outside sources that apply to the ORP and RPP.

Strategic Management. These documents establish the RPP strategy and ORP management agreements with other DOE organizations and the RPP. They apply only to the ORP and the RPP and most require both DOE-HQ and ORP approval.

Baseline Management. These documents define the upper part of the RPP baseline (scope, schedule, and cost) and describe how ORP will manage the RPP. These documents are approved and controlled by the ORP.

The baseline scope, schedule, and cost are as follows:

- Scope: The MARR describes the mission, the functions to be conducted to carry out the mission, and the system requirements for each function. The RPP work breakdown structure (WBS) presents the upper levels of the structure, and the WBS dictionaries define the scope and other aspects of those WBS elements.
- Schedule: The RPP integrated mission schedule combines and integrates the TFC, WTPC, and ORP schedules into a single project schedule and is the baseline schedule. The expanded management summary schedule, management summary schedule, and master schedule are progressively simpler schedules that serve different management purposes. The ORP-controlled milestones are identified on the RPP integrated mission schedule and the expanded management summary schedule.
- Cost: The summary cost estimate presents the estimated life-cycle cost by Level 2 WBS element through various periods of the project.

This PMP describes the project and how ORP manages it. Section 5.0 describes the ORP project management systems. The *Safety Management Functions, Responsibilities, and Authorities Manual for the U.S. Department of Energy, Office of River Protection* (ORP M 411.1-1) identifies DOE directives that apply to ORP and the RPP, and assigns responsibility for implementing the directives to specific ORP organizations. The ORP WBS presents the WBS elements for which the ORP federal staff (and support contractors) are responsible and

defines the work scope for each of the WBS elements. The ORP implementing directives document how the ORP plans to carry out many of its responsibilities.

Contracts. The ORP uses these documents to pass the work description, requirements, and performance measures to the contractors. They are legally binding agreements between the ORP and its Prime Contractors. The contracts identify many laws, regulations, and DOE directives that the contractors must follow.

Work Management. These documents extend the work scope (including technical requirements) to lower levels of detail. The contractors then estimate the resources required to execute the work, and develop a schedule and cost estimate that is the basis for the RPP baseline. The contractors' work processes, controls, and work products developed in response to contract requirements are also included.

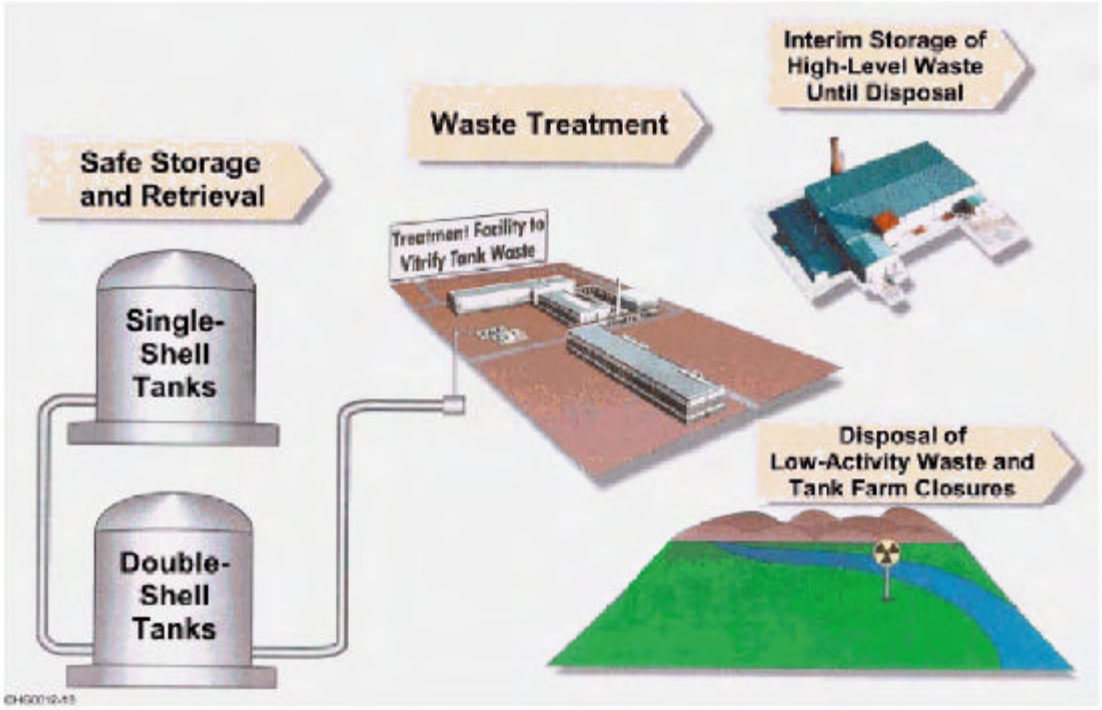
2.2.2 Technical Approach

The waste will be removed from the tanks, separated into HLW and LAW fractions, immobilized, and then the LAW disposed on site and the HLW stored until it can be shipped off site to a federal geologic repository. Separating the waste into LAW and HLW reduces the amount of HLW, which is more expensive than LAW to immobilize and dispose.

In addition, the waste must be safely stored until it is retrieved. Monitoring, surveillance, and maintenance activities are performed to validate safe storage conditions and tank integrity and to maintain the tank farm infrastructure so that it can be used for future waste retrieval and transfer activities.

Upon completion of waste processing, the tank farms, associated pipelines and facilities, and contaminated soils will be disposed through a regulatory process called closure (see Figure 2-7). The ORP is also responsible for disposing of 60 small miscellaneous tanks and 1,933 highly radioactive cesium and strontium capsules derived from previous tank waste treatment missions. (Another Hanford Site program is responsible for storing the capsules until they are transferred to the ORP for disposal.)

Figure 2-7. Pathway to Closure



As discussed in Section 1.0, the plan to treat and immobilize all Hanford Site tank waste is divided into two phases. This approach was chosen because it meets all regulatory requirements, addresses technical uncertainties, and provides flexibility to accommodate future changes in response to new information and technology development. The project continues to conduct alternatives studies and technology development to improve the technical approach, reduce project cost, and accelerate the schedule.

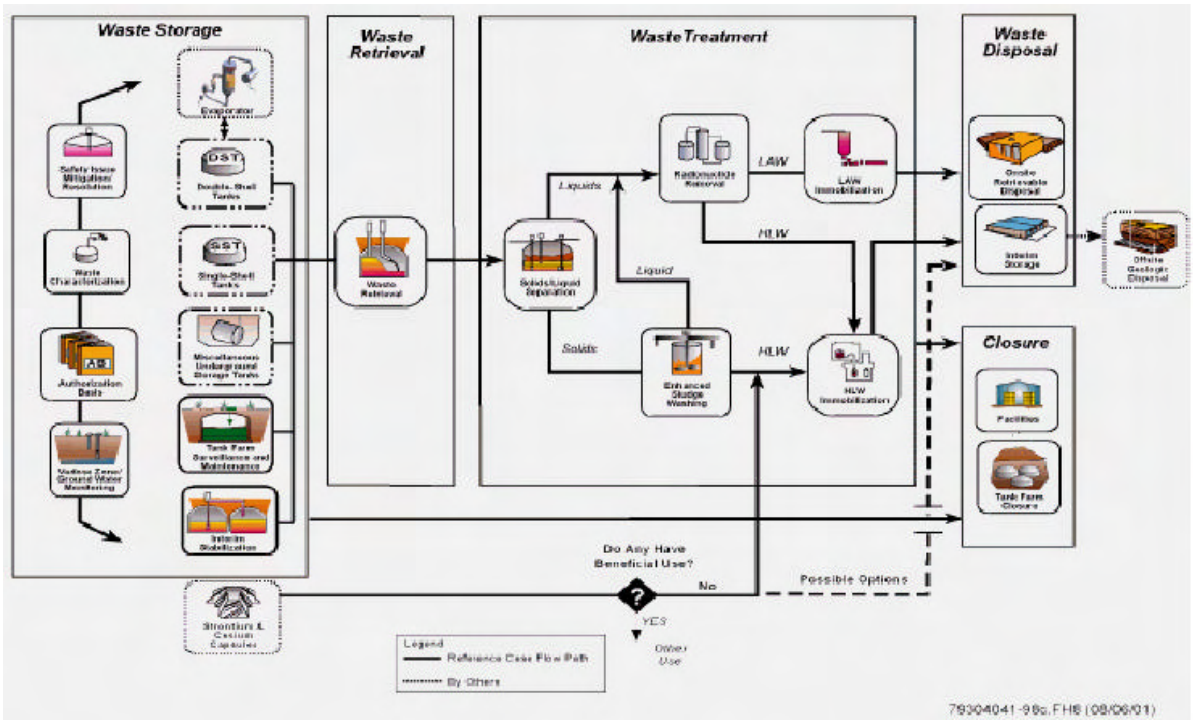
3.0 PROJECT BASELINE

The RPP baseline consists of three components: scope, schedule, and cost. The scope defines the work to be performed (what and how well) over the life of the project. The schedule identifies the major milestones and shows when the work must be done to meet the milestones. The cost provides an estimate of the resources required for completing the scope. These three components of the baseline are described below and their documentation is shown on the project management document hierarchy (Figure 2-6). Section 5.0 describes the project management systems used to manage and control the RPP baseline.

3.1 SCOPE (WORK TO BE EXECUTED)

To accomplish its mission, the RPP will build and operate a WTC to carry out the five major functions shown in Figure 3-1. The MARR provides a further breakdown of these functions and the requirements that must be met while doing this work.

Figure 3-1. Simplified Flow Diagram.



Waste Storage. The waste will be safely stored until it is retrieved for treatment and disposal. This requires resolution of technical and safety issues, interim stabilization of SSTs, waste characterization, reduction of waste volume by evaporation, and surveillance and maintenance of the waste and tank farms.

Waste Retrieval. The waste will be retrieved from all the tanks to the extent necessary for closure, staged in DSTs, and then fed to the waste treatment facilities. New waste retrieval facilities and pipelines will be required for SSTs and retrieval equipment will be required for DSTs. SST waste retrieval will use hydraulic sluicing systems and DST retrieval will use mixer pumps to produce slurry that can be pumped out of the tanks. New SST waste retrieval systems will likely be required to remove waste heels, which are difficult to remove, and to retrieve waste from tanks that have leaked or may leak.

Waste Treatment. The waste feed from the tanks will be separated into soluble and insoluble fractions. Key radionuclides will be removed from the soluble fraction so it can be classified as LAW, and then immobilized for onsite, near-surface disposal. The radionuclides separated from the soluble fraction will be added to the insoluble fraction, which is classified as HLW, and immobilized for disposal in an offsite federal geologic repository.

These activities will be conducted in new facilities in two phases. In the first phase, a WTP will be designed and constructed to treat an Initial Quantity of waste (i.e., 10 percent of waste by mass and 25 percent by radioactivity). The remaining waste will be treated during the Balance of Mission. Additional new facilities will provide the capacity needed for the

Balance of Mission. The treatment process will include solids/liquids separation, caustic sludge washing, ion exchange and precipitation for radionuclide removal, and vitrification. The molten HLW and LAW glass will be poured into stainless steel canisters where it will cool and solidify. The canisters will then be sealed and decontaminated.

The cesium and strontium capsules will be prepared to meet geologic repository acceptance criteria. It is currently envisioned that the capsules' contents will be vitrified along with the other HLW during the Balance of Mission.

Waste Disposal. The ILAW will be disposed onsite in near-surface facilities, and the IHLW will be stored onsite until it can be shipped to a federal geologic repository for disposal.

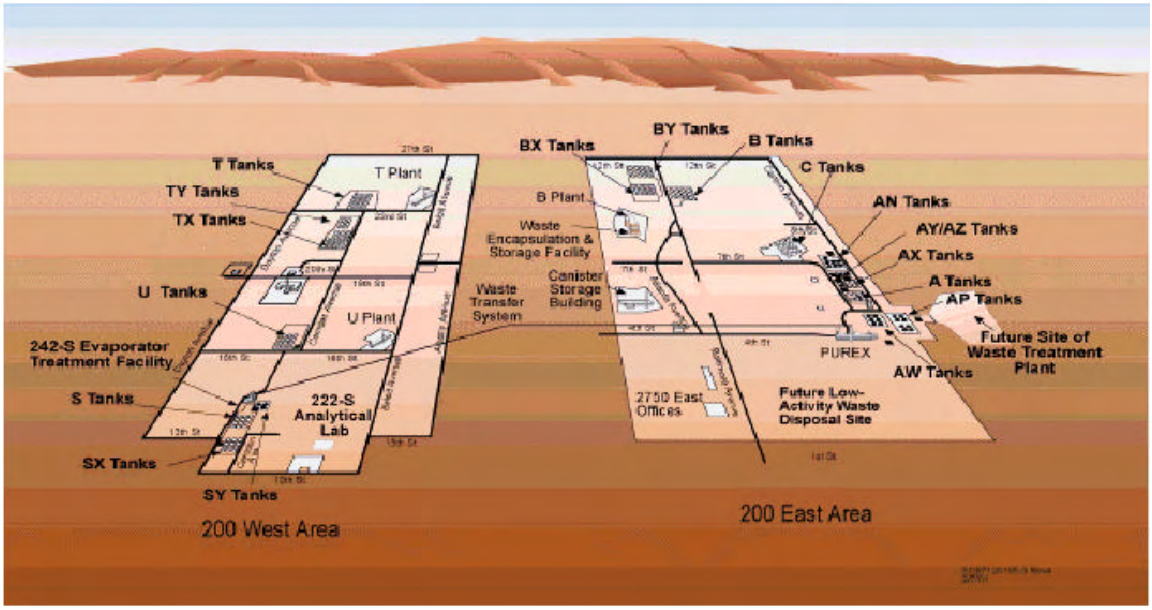
The ILAW will be disposed in new below-grade facilities in the 200 East Area. The facilities are envisioned to resemble Hanford Site mixed low-level waste burial trenches with intrusion-prevention barriers placed on top of the filled trenches. These facilities will be modular and constructed as needed.

A portion of the Canister Storage Building will be outfitted to store the IHLW canisters produced during Phase 1. Additional modular storage facilities will be constructed for the Balance of Mission. When the geologic repository is ready to start accepting the Hanford Site's IHLW, a shipping facility will be needed to prepare the canisters and load them in the repository's shipping casks for transport to the repository.

Closure. The approach for closing the tank farms after waste retrieval is completed has not been completely defined. Tank closure is envisioned to include back-filling the tanks with grout and/or gravel, constructing an intrusion-prevention barrier over the top of the tank farms, and installing long-term environmental monitoring (waste migration) instrumentation. Tank farm piping, pits, and structures will be removed or closed in place as part of tank farm closure. Other facilities, such as the new waste treatment facilities, will be clean-closed or deactivated and decommissioned.

The RPP is responsible for managing a large number of facilities in the 200 East and 200 West Areas of the Hanford Site as shown in Figure 3-2. These facilities are listed in the Facility Life Cycle Report found at http://www.rl.gov/se/cm/facilitylifecycle.xls.

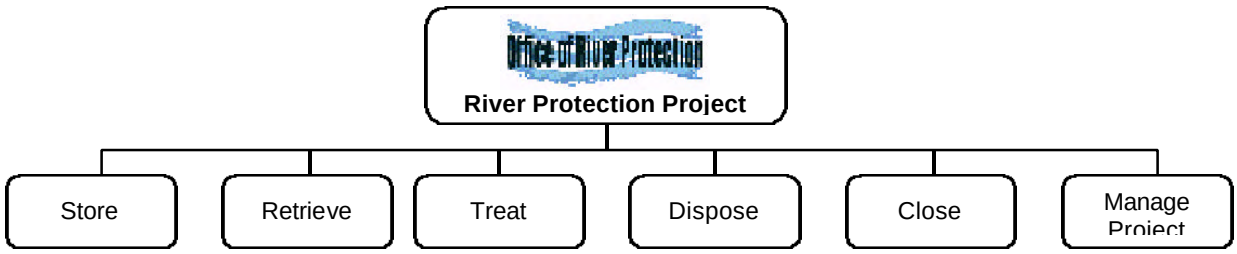
Figure 3-2. Office of River Protection Project Facilities.



3.1.1 Work Breakdown Structure

A WBS is used to organize and integrate the RPP baseline. Figure 3-3 shows the top levels of the RPP WBS and Appendix B provides the ORP-defined levels of the WBS that match the Functional Logic Diagram (see Appendix C). The ORP has prepared WBS dictionaries that describe the scope and requirements for the upper-tier work elements (DOE/ORP-2001-21, *River Protection Project Work Breakdown Structure*). The contractor WBS is an extension of the RPP WBS. The contractors develop their WBS's and dictionaries, schedule the work, and resource load the schedules. The schedules and cost estimates are then rolled up, integrated, and reflected in the RPP schedule and cost estimate. The WBS is also used for accumulating costs and measuring performance. The ORP has the authority under the contracts to evaluate performance down to the lowest measurable task level.

Figure 3-3. Work Breakdown Structure for the River Protection Project.



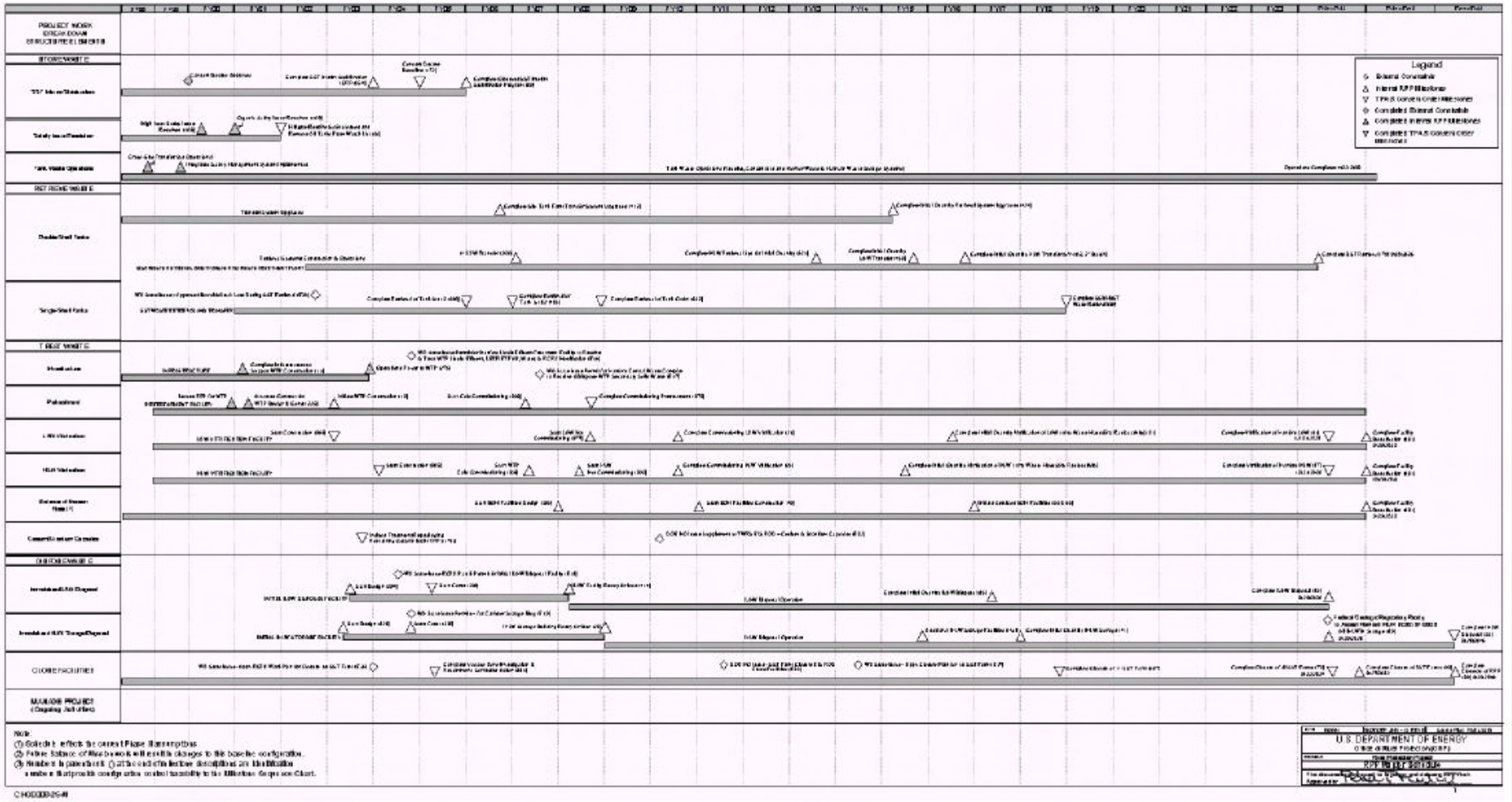
Although all work throughout the life cycle of the project is identified, detailed planning has been focused on the next ten years of work. In addition to the five functions discussed in

Section 3.1, the WBS also includes a Manage Project function. The work scope in this function includes activities necessary to plan, organize, budget, measure, and control performance to ensure the project accomplishes the mission on schedule in a safe, environmentally sound, and cost-effective manner. The work scope performed by the ORP federal staff and its support contractors is described in DOE/ORP-2001-22, *Office of River Protection Work Breakdown Structure*. Execution of the individual scopes of work is managed and measured via oversight and earned-valued performance assessment.

3.2 SCHEDULE

The RPP schedule aligns with the WBS and describes the duration of the logical sequence of activities required to accomplish the RPP scope as defined in the WBS dictionaries. The RPP baseline schedule is an integration of the TFC, WTPC, and DOE schedules, in accordance with ORP M 430.2, *RPP Integrated Schedule Specification*, and is documented in DOE/ORP-2001-12, *River Protection Project Integrated Mission Schedule*. This schedule employs a Critical Path Method, and identifies interface points among activities, constraints, decision points, and milestones. It also provides the basis for variance reporting and documenting schedule commitments. The integrated mission schedule is graphically depicted in DOE/ORP-2001-13, *RPP Expanded Management Summary Schedule*, and summarized in DOE/ORP-2001-14, *River Protection Project Management Summary Schedule*. The total project is more easily understood on this summarized schedule, which is provided in Appendix D. A further summarization of the RPP schedule, useful for external communication, is DOE/ORP-2001-15, *RPP Master Schedule*, shown in Figure 3-4. The DOE-HQ- and ORP-controlled milestones will be specifically identified on the integrated mission schedule and the expanded management summary schedule. It will take decades to complete the project, currently projected to be 2046.

Figure 3-4. River Protection Project Master Schedule.



A Milestone Sequence Chart is also used to understand the schedule of activities and commitments. It is a one-page listing of RPP major events or milestones in chronological order. Supporting milestones required for completing each major event are included. The chart identifies the type of milestone (e.g., Hanford Federal Facility Agreement and Consent Order [Tri-Party Agreement]) and responsible organizations.

3.3 COST

The monetary value of all the resources needed to accomplish the work scope on the project schedule is the cost. Estimated costs are included in the RPP resource-loaded schedule for each task and are integrated with the RPP scope and schedule via the WBS. This cost element of the baseline is developed as part of the integrated mission schedule, and, therefore, reflects the TFC, WTPC, and DOE resource-loaded schedules. This cost estimate also provides the basis for budgeting and contractor variance reporting. The RPP estimated cost for the life cycle of the project is summarized in DOE/ORP-2001-16, River Protection Project Summary Cost Estimate, and shown in Table 3-1. The total project estimated cost is approximately $35 billion unescalated ($52 billion escalated) through 2046. The ORP cost control thresholds are described in ORPID 414.3-1, Baseline Change Control Procedure.

Table 3-1. River Protection Project Summary Cost Estimate (dollars in millions - unescalated).

	Prior years (FY 1997 – FY 2000)	FY 2001	FY 2002	FY 2003 - FY 2006	Total FY 1997 - FY 2006	FY 2007 - FY 2011	Total FY 1997 - FY 2011	FY 2012 - FY 2018	Total FY 1997 - FY 2018	FY 2019 - FY 2046	Total life cycle
Storage	800	136	123	334	1,393	377	1,770	482	2,252	760	3,012
Retrieval	297	90	110	438	935	1,422	2,357	4,236	6,593	55	6,648
Treatment – Initial Quantity*	423	241	556	2,695	3,915	880	4,795	534	5,329	861	6,190
Treatment - Balance of Mission	--	--	--	--	--	1,043	1,043	7,979	9,022	2,868	11,890
Dispose	29	14	15	174	232	375	607	1,352	1,959	1,213	3,172
Close	8	14	14	50	86	48	134	18	152	483	635
Manage	151	127	125	551	954	548	1,502	400	1,902	1,444	3,346
Total	1,708	622	943	4,242	7,515	4,693	12,208	15,001	27,209	7,684	34,893

GENERAL NOTES: The federal geologic disposal fee for high-level waste, estimated at $5.3 billion, is not included in this project. Total escalated costs through 2046 are approximately $52 billion; escalation is based on a 2.5 percent compounded annually rate The following Baseline Change Requests (when approved) will increase the total life cycle cost (unescalated) by $5.2 billion:

- RPP-01-147 - DST Retrieval Project (W-343) ($0.2 billion)
- RPP-01-063 - SST Balance of Mission Update ($3.3 billion)
- RPP-01-XXX - FY 2002 TW06 Baseline Adjustment (Phase 1 Ops, Deactivation, D&D) ($1.7 billion).

*Includes infrastructure costs. FY = fiscal year.

4.0 MANAGEMENT STRUCTURE, RESPONSIBILITIES, AND AUTHORITIES

To execute the RPP mission, the ORP receives direction, guidance, and input from Congress, DOE-HQ, and RPP stakeholders. The RPP management team (i.e., ORP, WTPC, TFC, and future WTP operator) executes the mission. The ORP coordinates and integrates RPP activities with RL and its contractors for Site services such as utilities and laboratories. The following sections describe the RPP organization, ORP organization, RPP organizational interfaces, and contracting and critical decision authorities.

4.1 RIVER PROTECTION PROJECT ORGANIZATION AND RESPONSIBILITIES

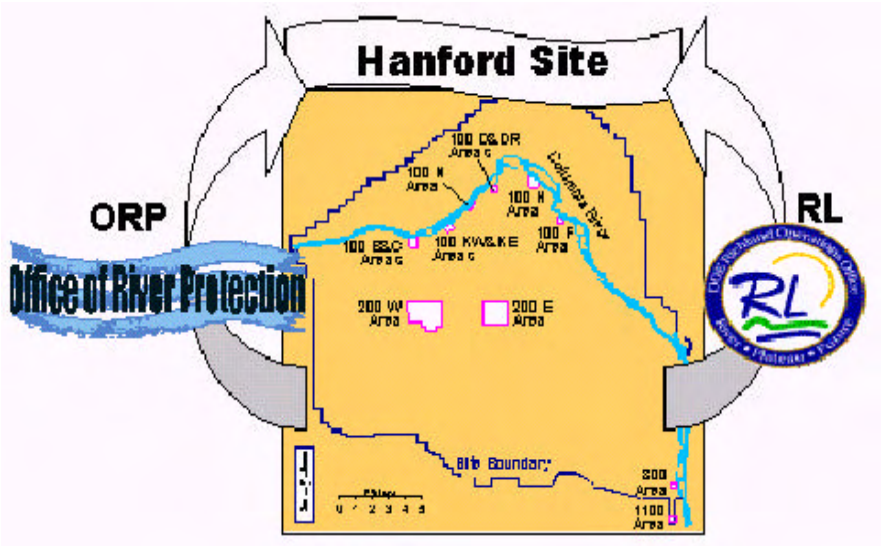
A project management team, consisting of the ORP and its contractors, is established to execute the RPP. RL and DOE-HQ interfacing requirements are coordinated and integrated into RPP activities, as are other external interfaces.

The *Memorandum of Agreement Among the Office of Environmental Management, the Office of River Protection, and the Richland Operations Office* outlines the roles and responsibilities of the three organizations as they apply to the RPP, including:

- The ORP Manager is responsible for the successful execution of the RPP.
- The ORP reports to the U.S. Department of Energy, Office of Environmental Management (DOE-EM) and coordinates Hanford Site activities with the Manager, RL.

To achieve mission objectives, the two DOE field offices at the Hanford Site are working together to leverage Site success, efficiency, and alignment (see Figure 4-1).

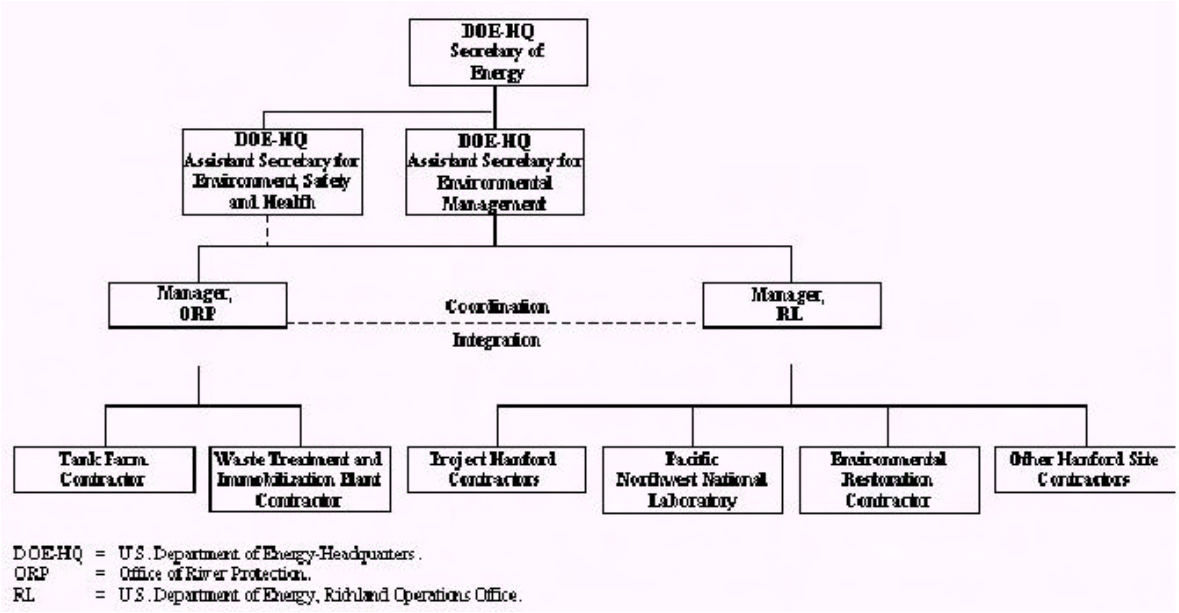
Figure 4-1. Two U.S. Department of Energy Offices, One Hanford Site.



- **Shared administrative services**
- **Shared Site services (security, fire protection, power)**
- **Common groundwater- adose zone investigations**
- **Joint future Site planning**

Figure 4-2 shows the primary relationships between the ORP and other DOE organizations and contractors performing the RPP mission.

Figure 4-2. Organizational Structure for the U.S. Department of Energy-Headquarters and the Office of River Protection



The roles of the DOE and Prime Contractors (with respective web site addresses to access additional information) associated with the RPP mission are as follows:

DOE-HQ (http://www.energy.gov) is responsible for the management and integration of all DOE activities, including those at the Hanford Site. DOE-EM provides programmatic overview of the entire RPP mission, including DOE-HQ oversight of the ORP program for the regulation of RPP contractors. The Assistant Secretary for Environment, Safety, and Health provides independent DOE oversight of the program for the regulation of RPP contractors and provides technical assistance.

RL (http://www.hanford.gov) is responsible for the ultimate restoration, long-term stewardship, and potential reuse of the Hanford Site. RL responsibilities to the ORP are providing infrastructure and support services.

ORP (http://www.hanford.gov/orp/index.html) is responsible to build and operate the WTC to complete the cleanup of the highly radioactive tank waste at the Hanford Site.

TFC (http://apweb02.rl.gov/rpp/) is responsible for tank waste storage, waste retrieval, interim storage, and/or disposal of immobilized waste. The TFC integrates activities with the DOE, the WTPC, and other Hanford Site contractors, as necessary.

WTPC (http://www.hanford.gov/contrctr/bni.html) will design, construct, and commission the WTP. In addition, the WTPC will integrate its activities with the DOE, the TFC, and other Hanford Site contractors via the TFC. Upon WTP commissioning, the WTPC will transition to a succeeding contractor to operate the WTP.

Project Hanford Management Contractors (http://www.hanford.gov/top/whowho.html) provide support to the RPP, as specified in DOE contracts, memoranda of understanding, memoranda of agreement, and interface control documents (ICD). Under the direction of the DOE, the Project Hanford contractors organize, plan, integrate, and manage most of the Hanford Site infrastructure and support services activities. Major support services for the RPP include evaporator operations for reducing waste volumes; the Liquid Effluent Retention Facility and Effluent Treatment Facility for managing liquid waste effluents; a laboratory for characterizing tank waste; the disposal of hazardous, low-level, radioactive, and mixed solid wastes; and physical infrastructure, e.g., electricity, water, roads, and telecommunications. Additional Hanford Site infrastructure and support services include engineering, construction management, emergency management, and safeguards and security (SAS).

Environmental Restoration Contractor (http://www.bhi-erc.com/) conducts the Hanford Environmental Restoration Program, including decontamination and decommissioning of surplus facilities. The Environmental Restoration Contractor also manages cleanup of the vadose zone and groundwater outside the tank farms.

Pacific Northwest National Laboratory (http://www.pnl.gov/) conducts research and technology development for tank waste, vadose zone, and groundwater issues.

Other Hanford Site contractors, including the Hanford Environmental Health Foundation and general support services contractors, support the ORP with their specific services.

Regulatory federal and state agencies, not shown in Figure 4-2, provide regulation and oversight of the RPP. Federal and state agencies regulate the ORP in a manner similar to other activities on the Hanford Site. The external regulatory agencies and their specific roles include the following:

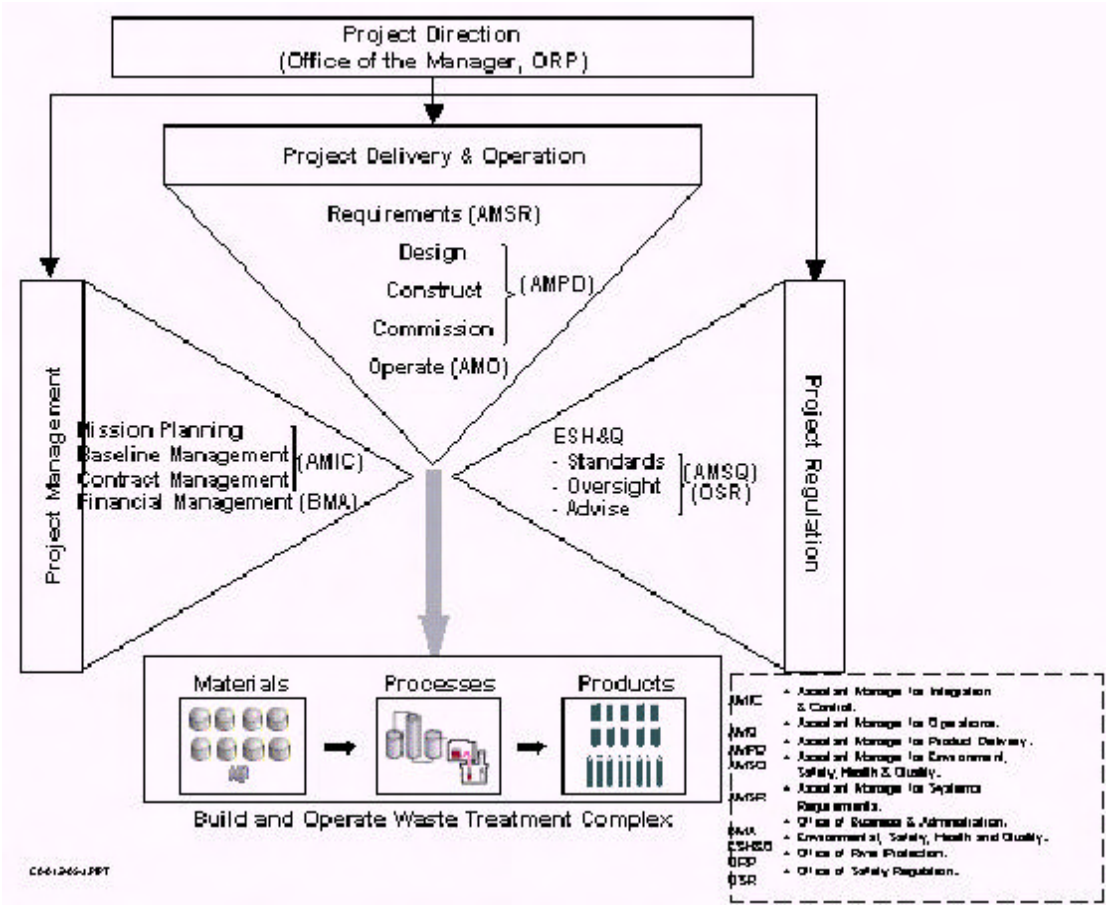
- U.S. Environmental Protection Agency (EPA) and Ecology negotiate and regulate DOE/ORP activities under the provisions of the *Resource Conservation and Recovery Act of 1976* through the Tri-Party Agreement.
- EPA and Ecology regulate and administer permits for treatment and storage operations under the *Resource Conservation and Recovery Act of 1976*, the *Washington State Hazardous Waste Management Act*, and the *Clean Air Act of 1977.*
- The Washington State Department of Health regulates radioactive air emissions.
- EPA, Ecology, and the Benton Clean Air Authority regulate nonradioactive air emissions.

- EPA, Ecology, Washington State Department of Health, and/or local health agencies regulate liquid effluents. Most WTP liquid effluents receive final treatment at other permitted Hanford Site facilities.
- Ecology and the U.S. Department of Transportation regulate offsite transport of radioactive waste and nonradioactive hazardous wastes.
- In addition, key stakeholders who provide input to ORP management include the State of Oregon, the Hanford Advisory Board, and the Tribal Nations.

4.2 OFFICE OF RIVER PROTECTION ORGANIZATION

As shown in Figure 4-3, the ORP performs four key functions: (1) Project Direction, (2) Project Delivery and Operation, (3) Project Regulation, and (4) Project Management. These functions are assigned to ORP organizational units who work together to accomplish the mission to build and operate the WTC.

Figure 4-3. Office of River Protection Organization Functional Responsibilities.



- Project Direction: The office of the Manager, ORP, is responsible for successfully executing the RPP. In this role, the Manager must ensure work is accomplished

safely using the guiding principles of integrated safety management (ISM), efficiently, on schedule, and within budget; provide strategic/long-term planning; manage the contractors via the contracts; involve the public; and coordinate with DOE-HQ, RL, and regulators. The Deputy Manager shares responsibilities with the Manager with a primary focus on ORP internal activities.

- The Office of Chief Counsel is responsible for internal and external legal support and DOE-HQ interface for legal matters.
- The Office of Communications provides support in the areas of public involvement, emergency response, regulatory affairs, and media relations. It interacts with Hanford Site personnel, DOE-HQ personnel, and stakeholders by providing press releases and conferences, media kits, tours/briefings, and issue papers.

Project Delivery--The Assistant Managers for System Requirements, Project Delivery, and Operations share the ownership for project execution:

- The Assistant Manager for System Requirements is responsible for managing facilities' requirements, research and technology programs, systems specifications and optimization, interfaces, and initial integration of ISM into plans and requirement documents.
- The AMPD is responsible for design to/construct to requirements, project management from design to decommissioning, critical decision reviews, and facilities turnover. The AMPD also is responsible for design review and construction safety, and compliance with the Integrated Safety Management System (ISMS) and Authorization Basis.
- The Assistant Manager for Operations (AMO) ensures the tank waste is safely stored and managed. The AMO ensures the waste is retrieved and pumped to the WTP. The waste is processed in the WTP, and the immobilized waste is stored or disposed. The AMO has line management responsibility for operational safety, including ISMS and Authorization Basis implementation.

Project Regulation--The Assistant Manager for Environment, Safety, Health and Quality and the Office of Safety Regulation are responsible for environment, safety, health, and quality standards, oversight, and advice:

- The Assistant Manager for Environment, Safety, Health and Quality (AMSQ) ensures work is being performed in accordance with the guiding principles and core functions of a robust ISMS, efficiently, and in compliance with applicable environmental permits, statutes, and agreements such as the Tri-Party Agreement (excluding WTP radiological, nuclear, and process safety). The AMSQ also ensures that quality programs are in place and implemented, and manages the TFC safety Authorization Basis.
- The Office of Safety Regulation (OSR) provides radiological, nuclear, and process safety regulation of the WTP. The OSR manages the WTP Authorization Basis.

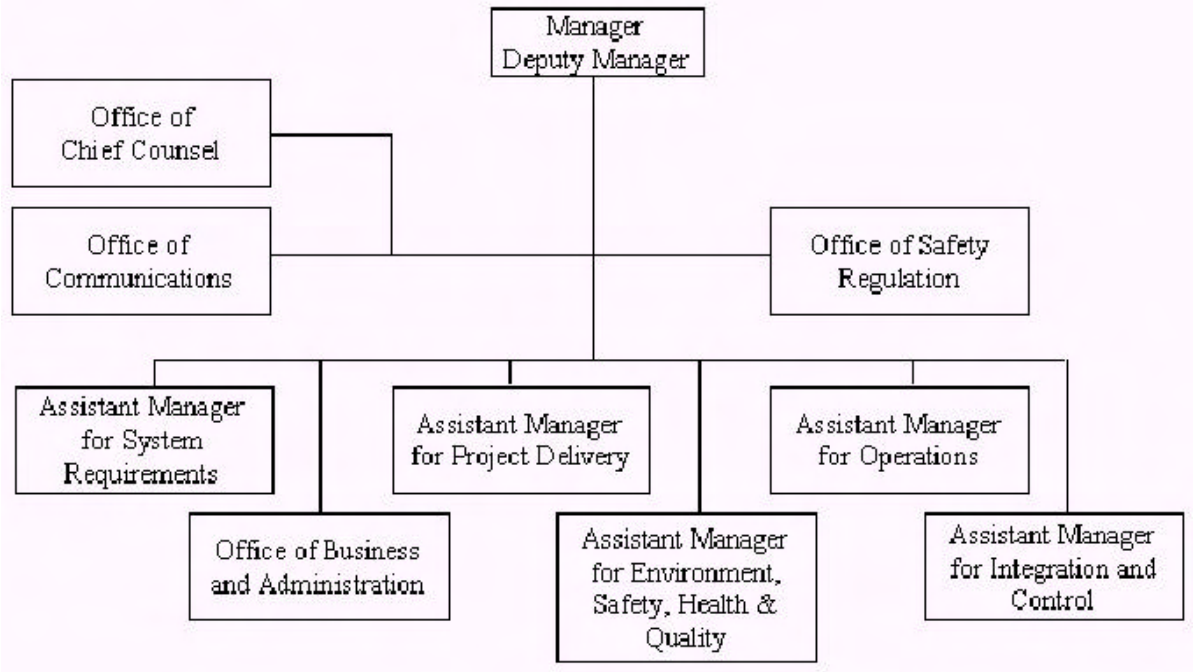
Project Management--The Assistant Manager for Integration and Control and the Office of Business and Administration are responsible for mission planning and baseline, contract, and financial management:

- The Assistant Manager for Integration and Control is responsible for strategic analysis, top-level requirements management, configuration management, contract management and administration, baseline integration, baseline change control, risk management, variance management, and performance measurement and reporting. Contract Management is responsible for all contractual interface activities with the contractors.
- The Office of Business and Administration develops and oversees cross-cutting business and administrative functions, such as submitting and supporting the ORP budget, managing the budget and funds process, and maintaining the finance system. The Office of Business and Administration also provides resource management and Management Information System management.

Senior Technical Advisors provide advice on key technical areas, such as nuclear and radiological safety, strategic planning, technological and scientific issues, project management, and organizational effectiveness.

The ORP functional *line* structure is shown in Figure 4-4. The ORP organization and division of responsibilities are detailed in ORP M 411.1-1.

Figure 4-4. Office of River Protection Organizational Structure.



4.3 RIVER PROTECTION PROJECT ORGANIZATIONAL INTERFACES

Successful execution of the ORP mission requires clear communication between the ORP and its contractors and external regulators. These include the following:

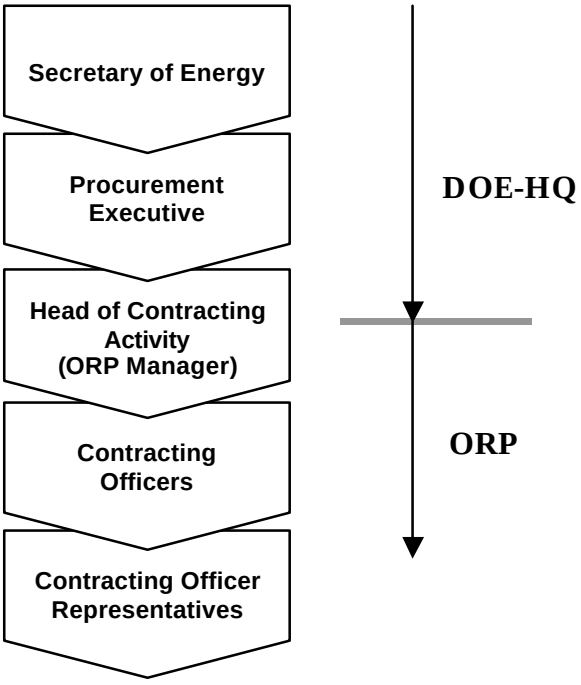
- Interfaces between the ORP and the Defense Nuclear Facilities Safety Board (DNFSB)--The interface procedure for DOE organizations and the DNFSB is described in DOE M 140.1-1A, *Interface with the Defense Nuclear Facilities Safety Board*. An RL liaison arranges for information exchange and meetings between the ORP and the DNFSB.
- Interfaces between the ORP and federal and state environmental regulatory entities--The DOE-EM policy for negotiating and approving environmental compliance and cleanup agreements is delineated in *Review and Approval Guidance for Environmental Compliance and Cleanup Agreements for the Office of Environmental Management.* The ORP maintains liaison with Washington State, Ecology, the Washington State Department of Health, and the EPA. Although not a regulatory interface, liaison is maintained with the State of Oregon as a key stakeholder in protecting the Columbia River communities.
- Interface among the ORP, RL, and DOE-HQ--*The Memorandum of Agreement Among the Office Environmental Management, the Office of River Protection, and the Richland Operations Office* documents ORP organizational authorities, roles, responsibilities, and reporting structure. The primary interface role of RL with the ORP is to ensure effective integration between ORP and Hanford Site services (including budget preparation). RL provides infrastructure and technical support to the ORP upon request, maintains responsibility for Hanford Site safety and security, and acts as the signatory authority for certain Sitewide permits and agreements.
- Interfaces between the ORP and its contractors--The critical interfaces for the RPP's mission success are those between the ORP and its contractors and the contractors with each other, particularly those involving engineering and technical requirements. Interface management is a requirement of the respective contracts. (See Section 4.4 for the contract management structure and authority, and Section 5.3 for Interface Management.)
- Interface between ORP and advisory groups, the public, and Tribal Nations--The Hanford Advisory Board, whose membership represents diverse interest groups, is a very active interface.

4.4 CONTRACTING AUTHORITY

Contracting authority in the DOE flows down from the Secretary of Energy to the ORP Contracting Officers and Contracting Officer's Representatives, as described below and shown in Figure 4-5:

- Secretary of Energy (S-1)--Authority and responsibility to contract for supplies and services necessary to meet the agency's mission are vested in the agency head. Much of this authority has been delegated to the DOE Procurement Executive.
- Procurement Executive (MA-5)--Authority and responsibility to establish contracting activities within the DOE, and to oversee and provide policy guidance to all DOE contracting operations. Appoints Head of Contracting Activities (HCA) for individual DOE activities.
- HCA (ORP Manager)--Authority and responsibility to make formal Contracting Officer appointments within the ORP, and perform other HCA functions as described in the Federal Acquisition Regulation and Department of Energy Acquisition Regulation. The ORP HCA, in accordance with the Memorandum from the Acting Director, Office of Procurement and Assistance Management (MA-5) to the Manager, ORP, February 26, 2000, *Delegation of Authority/Designation Head of Contracting Activity (HCA)*, is the ORP Manager.
- Contracting Officers--Authority and responsibility to make formal Contracting Officer Representative appointments within the ORP, and broad discretion to perform Contracting Officer functions as described in the FAR and DEAR.
- Contracting Officer Representatives--Limited authority and responsibility to provide technical direction regarding statement of work technical matters that are within the scope of work stated in the contract.

Figure 4-5. Contract Management Authority.

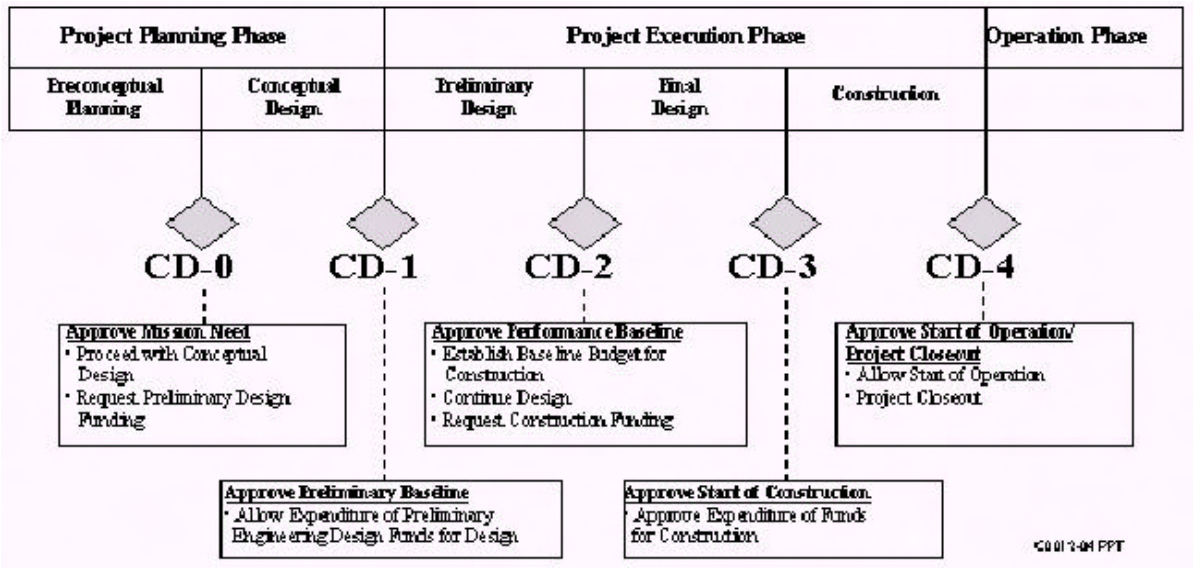


DOE-HQ – U.S. Department of Energy – Headquarters
ORP – Office of River Protection

4.5 CRITICAL DECISION AUTHORITIES

Program and Project Management for the Acquisition of Capital Assets (DOE O 413.3) defines the project acquisition process, the critical decision requirements, and the review process used by the Deputy Secretary as the Secretarial Acquisition Executive during the planning and execution of a capital project. Critical decisions are formal determinations or decisions at specific points in a project phase that allow the project to proceed to the next phase and commit resources. Figure 4-6 depicts the project acquisition process and the critical decisions that are required for each phase of the project.

Figure 4-6. Project Acquisition Process and Critical Decisions.



The ORP is responsible for the review of acquisition projects for critical decisions. For the RPP, critical decision authority for projects with an estimated cost up to $400 million has been delegated to the Construction Team Lead. Critical decisions are implemented through ORP-OPD-PP-02, *Critical Decision Process*, which includes an Energy System Acquisition Advisory Board-equivalent board for line-item subprojects. Critical decision determinations are planned so that necessary documentation and activities can be performed without causing delays in project schedules. In conjunction with the authority vested in the ORP, a Memorandum of Approval by the Secretary authorized the ORP to finalize and award the WTP contract for design, construction, and commissioning, thus granting the ORP authority for all critical decisions for the WTP.

5.0 PROJECT MANAGEMENT SYSTEMS

This section describes the primary management systems the ORP uses to manage the project. The management systems are implemented through policies, plans, procedures, and manuals. Each management system description contains a summary of the management process and a

document hierarchy diagram. The document hierarchy diagram identifies the external requirements, source documents, and the documents within the RPP that implement these requirements. The management systems described in this section are as follows:

- Systems Engineering Management
- Configuration Management
- Interface Management
- Risk Management
- Performance Measurement
- Contract Management
- Integrated Safety Management
- Emergency Management
- Safeguards and Security
- Quality Assurance
- Communications.

5.1 SYSTEMS ENGINEERING MANAGEMENT

RPP systems engineering management is implemented in accordance with DOE Orders, including DOE O 413.3; DOE O 430.1A, *Life Cycle Asset Management*; and DOE O 435.1, *Radioactive Waste Management.* RPP requirements for systems engineering management are defined in this PMP and in the TFC and WTPC contracts. Note that these contracts have precedence over the PMP in specifying the requirements that the contractors must meet. For example, DOE O 413.3 is not applicable to the WTPC, and only portions of DOE O 430.1A and DOE O 435.1 are applicable as specified in the contract.

The TFC implements systems engineering through HNF-SD-WM-SEMP-002, *Systems Engineering Management Plan for the Tank Farm Contractor*, a contract-deliverable. The WTPC implements systems engineering through contract-deliverable PL-W375-TE00006, *Project Execution Plan*, and a to-be-developed systems engineering management plan.

Systems engineering is a proven, disciplined approach that clearly defines the mission; identifies, allocates, and manages systems functions and requirements; identifies and manages risk; establishes a basis for informed decision making; and verifies that products and services meet mission needs. In summary, it is an interdisciplinary engineering management process to evolve and verify an integrated, life-cycle balanced set of system solutions that satisfy customer needs.

The general systems engineering process used for this project is as follows:

- *Define and Analyze Mission*. An RPP mission analysis is performed and maintained to transform strategic goals delineated into a set of top-level technical functions and

requirements which, when fully implemented, will accomplish the strategic goals. This process results in the RPP MARR.

- *Analyze and Allocate Functions and Requirements.* The top-level functions and requirements are analyzed, decomposed, and allocated to the physical system (system architecture) and to the WBS. Safety, quality, environmental, performance, reliability, operability, maintainability, human factors, and other engineering specialties are integrated into the analysis, as are constraints (limiting conditions imposed by external requirements and interfaces). System boundaries and interfaces are defined, and form, fit, and function are examined. This process results in a configured physical system and in a controlled WBS that satisfy the mission requirements. The TFC and the WTPC further decompose the RPP top-level physical system and WBS.
- *Analyze and Select Alternatives*. Functions and requirements are sequenced in a series of alternatives that are analyzed, using a number of tools and techniques. The ORP, together with the TFC and the WTPC, identifies potential opportunities to optimize the RPP to reduce costs, reduce programmatic risk, and accelerate schedule. These candidate optimizations are identified, screened, analyzed, and dispositioned, using an objective, structured, and documented process. Analysis of alternatives results in an optimized expanded management summary schedule and in optimized waste-sequencing solutions. The TFC and the WTPC participate in RPP alternatives analyses, and conduct lower-level analyses as necessary.
- *Verify and Validate System Performance*. The RPP verifies that the selected alternative meets it specified requirements and integrates interfaces properly. It also validates that the detailed requirements are consistent with respect to the top-level requirements. Verification and validation are performed through test and evaluation, and through monitoring of the contracts. The TFC and WTPC perform lower-tier verification and validation as they deem necessary.

The MARR describes the RPP functions and requirements that ORP manages for the project life cycle. The hierarchy and relationships of the RPP functions are depicted on a functional logic diagram. The hierarchy of the RPP functions and the RPP WBS (Section 3.1.1) are consistent, and have the same six top-tier elements: Store, Retrieve, Treat, Dispose, Close, and Manage Project. These functions and their associated requirements are allocated to elements of the architecture (physical system) where the functions are performed. All RPP functions are grouped within one of these six broad functions, and each function has been assigned the same number as its corresponding WBS element. This ensures a logical correlation between each RPP function, the requirements, the architecture, and the work scope necessary to establish the associated functional capabilities. Appendix C, Figure C-1 shows how the RPP functions and WBS elements are mapped to each other.

The MARR describes the top-tier system (also called mission or technical) requirements for the RPP. This set of requirements defines what work is to be done to achieve the RPP

mission. Additional system requirements are derived from the analysis of functions and requirements conducted in the systems engineering process at the RPP level, and by the TFC and WTPC.

The RPP also operates under management (programmatic) requirements, which may apply constraints to the system requirements or add additional deliverables in support of achieving the mission. (An example of a constraint to a system requirement is the requirement to manage a capital project under the "Critical Decision" rules of DOE O 413.3, which requires a structured sequence to project completion. An example of an additional deliverable is the requirement to have a quality assurance plan, which is driven by 10 CFR 830.120, "Subpart A-Quality Rule," and DOE O 414.1A, *Quality Assurance*, and is required of the RPP and its contractors.) Management requirements are described in this PMP and in other ORP documents (e.g., ORP M 411.1-1).

System and management requirements flow down to the TFC and WTPC via contracts. Contractors may internally impose additional requirements, although care must be taken to ensure that implementation is within allowable costs.

The following sections describe other functions classically within systems engineering, such as configuration management, interface management, requirements management, and risk management.

The TFC and WTPC are required by contract to have systems engineering programs that comply with DOE systems engineering requirements. Figure 5-1 shows the systems engineering document hierarchy.

5.2 CONFIGURATION MANAGEMENT

Configuration management principles underlie sound business practices. Configuration management is applied to items (systems, structures, and components) and information (data, procedures, and programs). Configuration management is the system for establishing and maintaining consistency of a product's performance, functional, and physical attributes with its corresponding requirements, design and operational information throughout its life; successful implementation provides a repository of approved, validated, accurate and current project information that is traceable from the requirements and their bases to technical, cost, schedule, contract, and other project critical information.

Configuration management for the ORP and TFC is imposed through DOE O 413.3 and for the WTPC through DOE O 430.1A. The RPP subsequently uses ANSI/EIA-649, *National Consensus Standard for Configuration Management*, and ISO 10007:1995(E), *Quality Management - Guidelines for Configuration Management*, as guidance for the Configuration Management System. Figure 5-2 shows the document hierarchy for configuration management.

The general process is described as follows:

- *Configuration Management Planning and Management.* This aspect includes planning configuration management processes for the context and environment in which they are to be performed and then managing in accordance with the planning. Assignment of responsibilities, training of personnel, determination of performance measurement, and subsequent assessment of measurements/trends to effect process improvements are all addressed in this step.

Figure 5-1. Systems Engineering Management Document Hierarchy

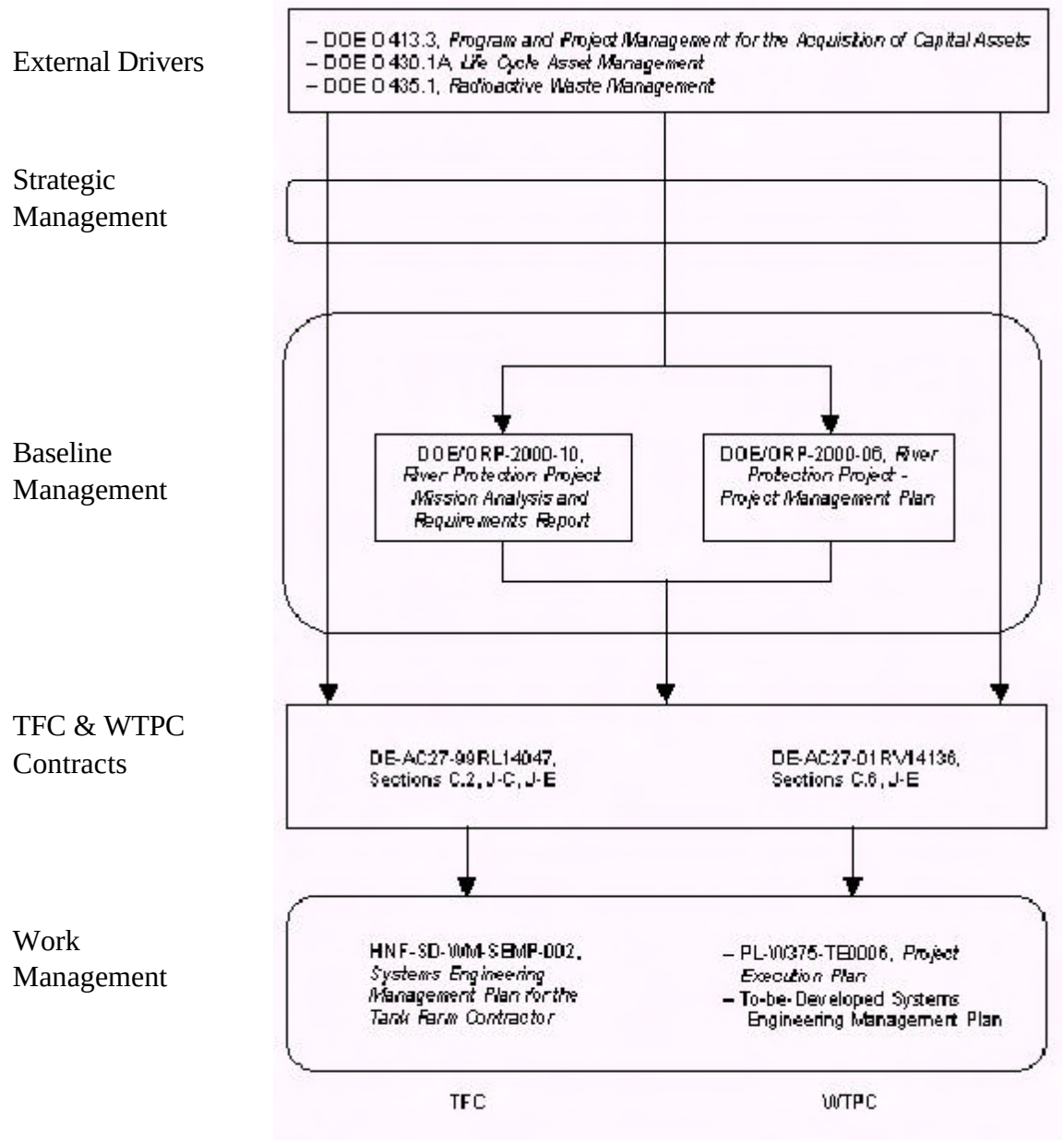
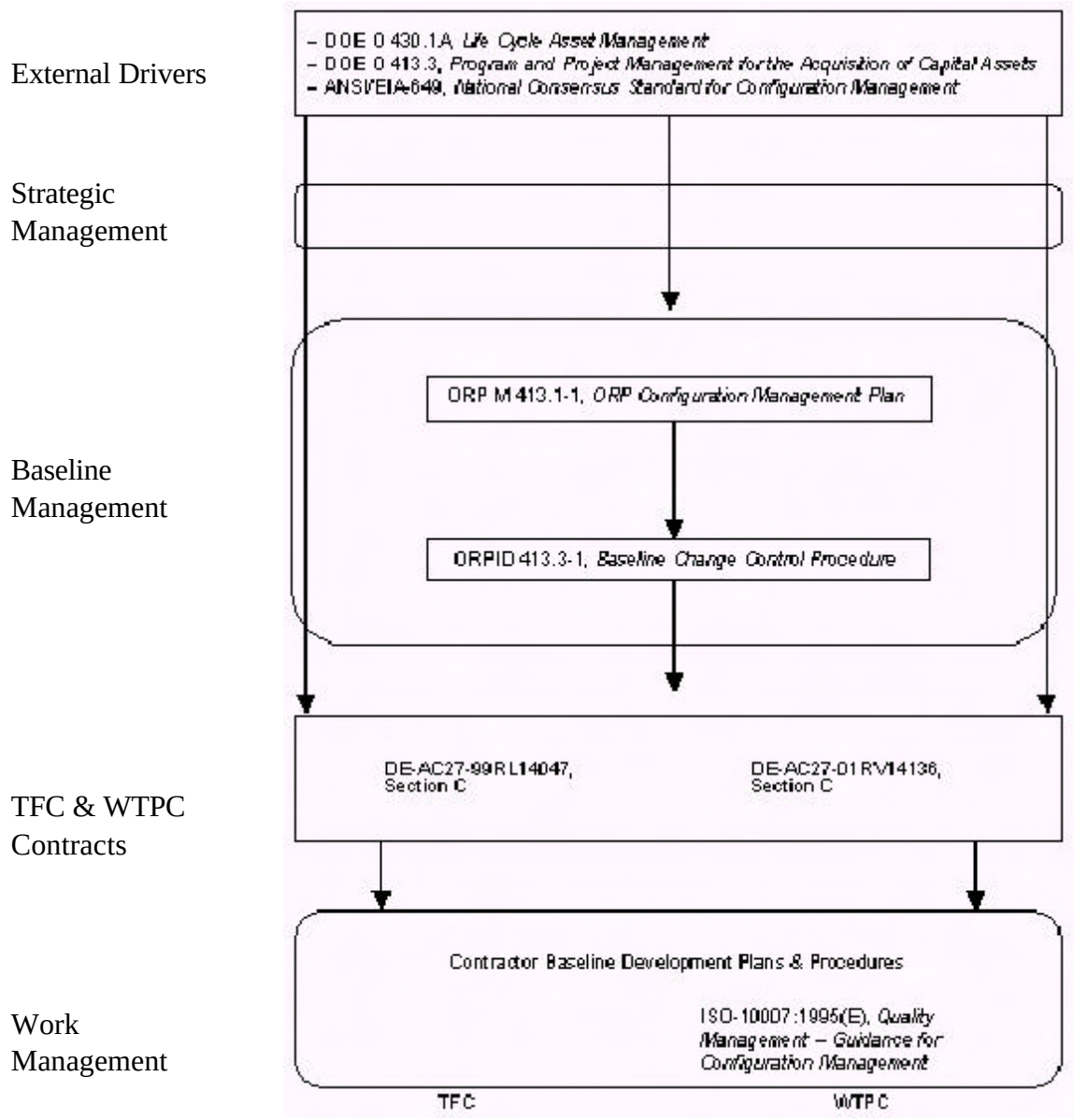


Figure 5-2. Configuration Management Document Hierarchy



- *Configuration Identification*. Configuration identification provides the basis from which the configuration of products is defined and verified. The physical structures, systems, components, products, and processes (configured items) are uniquely identified using a grading approach; related information that defines and describes the configured item and is important to control is also established. Configured items and information are then placed under configuration control so that changes can be managed and accountability maintained. Information is placed under configuration control by capturing it in a controlled media, tracking it using a configuration status accounting system, and allowing only controlled and approved changes.

- *Configuration Change Management*. Configuration change management controls changes to a configured item and information such that they are accomplished using a systematic, measurable change process. The principle of change control is to maintain consistency among the requirements, product configuration, and product information as changes are made. All changes, whether temporary or permanent, to configured items and information are identified, documented, validated, dispositioned, implemented, verified, and closed; changes are tracked from point of identification through closure. The RPP baseline change control process provides the linkage for configuration management change control between the ORP and Prime Contractors. ICDs are central to maintaining control of changing technical interfaces between the ORP Prime Contractors. Section 5.3 describes interface management.
- *Configuration Status Accounting*. The configuration status accounting system records and reports all information necessary to manage configuration effectively, including a listing of the approved configuration, and the status of change proposals. The status accounting provides an accurate, timely information base concerning configured items and their associated information that is important throughout the RPP life cycle.
- *Configuration Verifications*. Configuration verifications, including periodic audits, are conducted to verify that a configured item's requirement attributes have been met, the configured item's design meeting those attributes has been accurately documented, and related information is current and represents the actual configuration.
- *Configuration Management of Digital Data.* The RPP Configuration Management Program includes the configuration management of digital data. Digital data management uses a graded approach and applies configuration management principles to ensure the integrity of digital representation of configured item information and other data.

5.3 INTERFACE MANAGEMENT

Interface management establishes disciplined control over the interfaces between the RPP and external (non-ORP) entities and between the ORP's Prime Contractors. Interface management is implemented in accordance with DOE O 413.3. Disciplined interface management supports successful project execution by ensuring that contractor and government activities are aligned and under configuration control at points of interface. Figure 5-3 shows the interface management document hierarchy.

Figure 5-3. Interface Management Document Hierarchy.

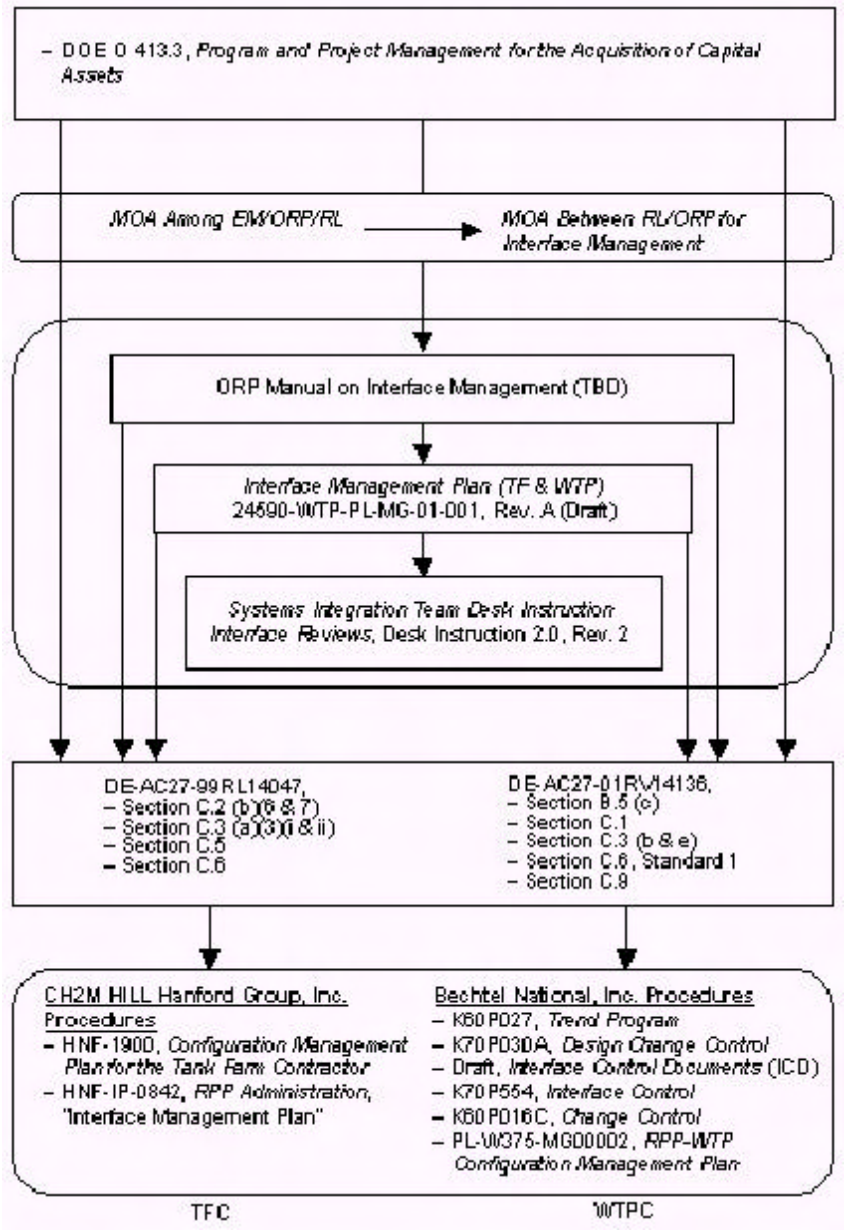
External Drivers

Strategic Management

Baseline Management

TFC & WTPC Contracts

Work Management



Specific types of interfaces include the following:

- Physical--where energy or matter passes through a physical connection between two systems, structures, or components
- Administrative--where information or data passes across organizational system boundaries
- Service--where work performed by one contractor is used by another (not always through a physical interface).

Interface agreements within RPP may be established (1) between the ORP and a non-Hanford Site entity (e.g., State of Oregon), (2) between the ORP (or one of its contractors) and RL (or one of its contractors), or (3) between two RPP prime contractors (WTPC and TFC).

The Assistant Manager for System Requirements and the Chief Financial Officer within the Office of Business and Administration have been designated to facilitate interface management across the RPP and work as a team, along with contractor management, to establish the technical and administrative aspects of the interfaces. Implementation of the interface management function involves participation and review in the interfaces and associated documentation. Specific processes used to implement this are addressed within ORP desk instructions.

The following principles govern development and management of interfaces within RPP:

- Formal interface documents[6] shall be created where a clear need exists and only to the extent required for effective execution of project requirements and tasks.
- Formal interface documents shall be maintained under configuration management.
- Work flows through the specified points of contact.
- The party affected by the change or that has to make the change to its project/operations has the responsibility for leading the interface interactions and resolutions.
- The affected parties shall approve the interface documents.

The following criteria shall be used to determine which interfaces will be managed at the DOE level:

- The interfacing entities are independent of one another (by contract or otherwise).
- Potential failure of the interface represents significant impact/risk to the RPP baseline (scope [including assumptions], schedule, and/or cost) or critical/key decisions.
- The interface can be influenced by a project/operational commitment or a change to technical requirements between the two entities or the interface is of sufficient complexity that many potential failures are likely.

If an interface meets any of the criteria above, the ORP shall ensure that a formal interface management mechanism is established. Each interface agreement requires ORP approval. The ORP is the decision authority for any interface issues that are not resolvable between its Prime Contractors. If an interface no longer meets the criteria mentioned above, then the interface mechanism with its appropriate documentation shall be closed out.

WTP-related interface documents are identified and defined in 24590-WTP-PL-MG-01-001, Rev. A (Draft), *Interface Management Plan* (TFC and WTPC). This document identifies organizational responsibilities for maintaining and controlling each interface document. The identified interface documents are an integral part of RPP's baseline management process and are contractually mandated by their identification in both RPP prime contracts (TFC and

WTPC). The specific requirements contained in these documents shall be incorporated into the RPP Baseline and the baselines maintained by both Prime Contractors.

Both RPP Prime Contractors are contractually required to work in concert with the DOE to develop, implement, and maintain an interface management process. This process revises existing interface documents and identifies and develops needed documents.

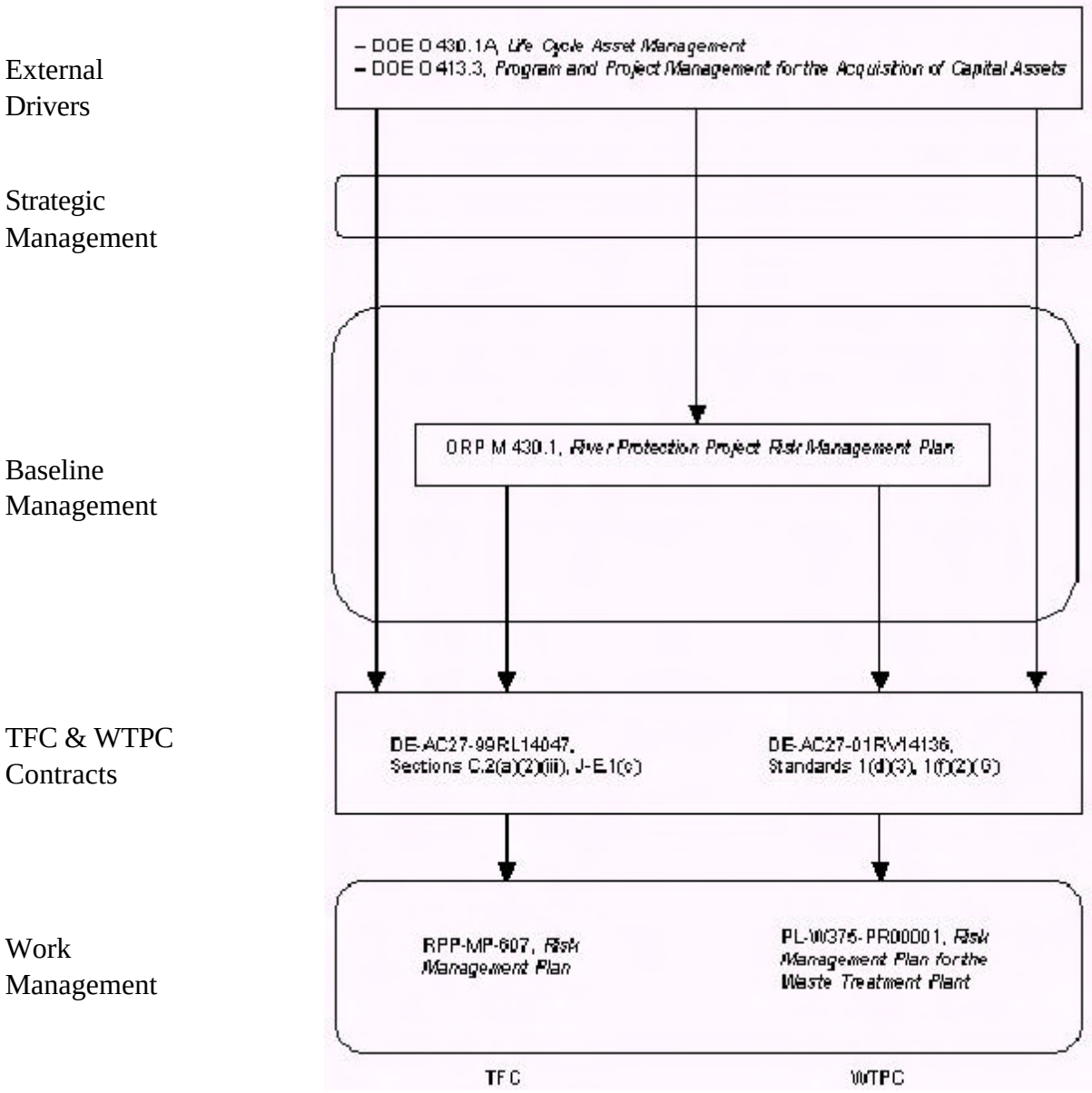
5.4 RISK MANAGEMENT

The RPP Risk Management Program is implemented in accordance with the *River Protection Project Risk Management Plan* (ORP M 430.1) and the WTPC and TFC contracts. The Plan implements the risk management requirements in DOE O 430.1A and DOE O 413.3. Figure 5-4 presents the risk management document hierarchy.

ORP M 430.1 describes the overall approach to managing risks within the RPP. The Plan describes the integrated risk management process, including inputs, ORP activities, and the products of the integrated risk management program, and defines roles, responsibilities, and relationships among the ORP, WTPC, and TFC. The Plan also describes the relationships to other RPP management systems, including Performance Measurement and Reporting, Interface Management, and the Change Control system.

Risk management provides a “look ahead” function that identifies potential obstacles to successful project completion and provides insights on how to avoid the obstacles or minimize their impacts. The risk types that the ORP is concerned with include those with external sources (e.g., Congress, Regulators), those with internal sources that affect a project interface (interface risk), and those with internal sources that do not affect a project interface (internal risk). Critical risks are any of the above types of risk that could lead to serious project impacts and need ORP senior management attention.

Figure 5-4. Risk Management Document Hierarchy.



The three main elements of the RPP integrated risk management approach are as follows:

- *Conduct an Integrated Risk Analysis.* The RPP contractors are using different risk management methodologies to conduct risk analyses of their projects. ORP M 430.1 describes the approach to combining the information produced by these different methodologies to conduct an integrated RPP risk analysis and develop integrated RPP risk management products. The main products of the integrated risk analysis include a prioritized ranking of risks by their potential impact on schedule

or cost and cumulative probability distributions that represent the relationship between the budget or schedule, and RPP completion.

- *Manage Critical Risks*. The ORP manages critical risks that could have serious impacts on the project. The ORP activities include developing risk mitigation plans that document how the project will avoid or mitigate critical risks. A Critical Risk Management List is developed and updated monthly to support management of selected high-priority, interface, and external risks that could lead to severe impacts on the project and need ORP senior management attention. The Critical Risk Management List includes descriptions of the critical risks, their probabilities and impacts to the project, ORP risk owners, ORP risk handlers, and a description of risk mitigation activities, and is used to track critical risk status. A monthly Critical Risk Meeting is conducted to identify new critical risks, assign ORP risk handlers to new critical risks, approve risk mitigation plans, discuss the status of existing risk mitigation plans, and provide senior management information on additional risk mitigation that may be needed. This information will help ORP senior management to plan and prioritize RPP activities, support programmatic decisions, and give direction.
- *Monitor Internal Risks*. The ORP allows its contractors to manage internal scope, schedule, and cost risks in accordance with their internal risk management plans and receives input monthly on the performance of internal risk-handling actions taken by the contractors. The ORP monitors performance of internal risk-handling actions using the Earned Value Management System, and holds the contractors accountable for deviations. The ORP will manage a contractor internal critical risk if it becomes apparent that the contractor cannot managed the risk and it will affect a project interface milestone.

5.5 PERFORMANCE MEASUREMENT AND REPORTING

The ORP is responsible for baseline performance measurement and reporting in accordance with DOE O 430.1A and DOE O 413.3. Additional reporting requirements to DOE-EM are included in the *Integrated Planning, Accountability, and Budgeting System (IPABS)*. Baseline performance monitoring is an essential ORP management responsibility to ensure federal and contractor project execution is successful in meeting or exceeding project baseline goals and objectives. Performance measurement and reporting supports ORP project management to do the following:

- Assess the results of work and safety activities compared to plans and standards.
- Develop corrective actions to mitigate identified trends and issues and concerns.
- Improve performance at all project levels.

Performance reporting requirements are included in the WTPC and TFC contracts. Monthly performance reporting is consolidated and is executed in accordance with ORP M 413.3-2, *RPP Monthly Performance Report*. The Manual provides reporting instructions to the RPP

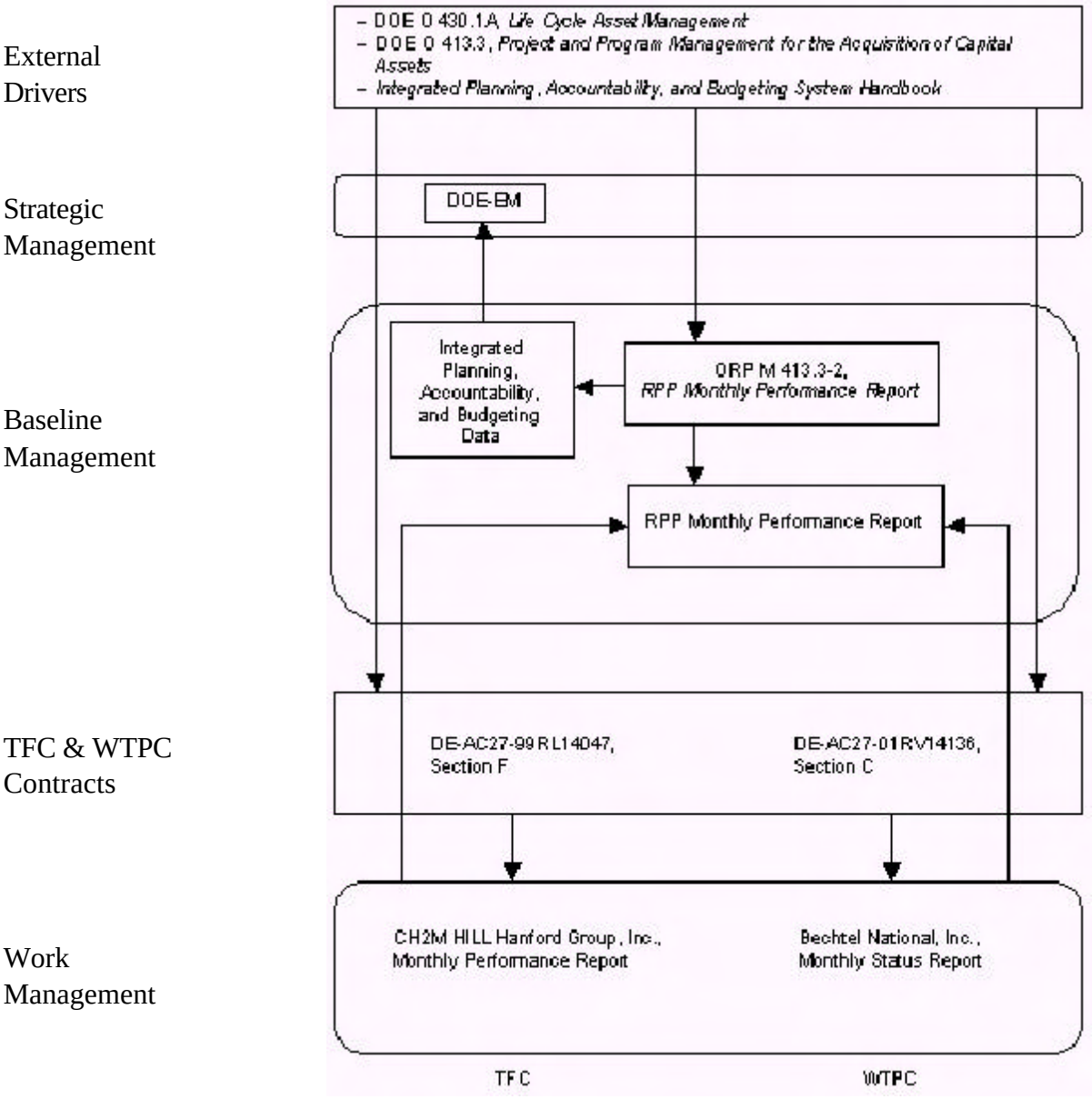
team for the generation of the RPP Monthly Performance Report. The ORP AMIC is responsible for consolidating performance data from the RPP members, supporting ORP management in the analysis of the data, and issuing the report monthly. The monthly report includes the following outline:

- Executive Summary
- Project Description
- Accomplishments
- Project Status
  - Cost and Schedule Performance
  - Critical Path Schedule Analysis
  - Estimate at Completion
  - Financial Status Analysis
  - Staffing Utilization
  - Key Milestones
  - Performance Objectives
  - Performance Measures/Metrics
- Upcoming Activities
  - Near-Term Activities
  - Long-Term Activities
- Safety/ISMS
- Issues and Resolutions
  - Regulatory Issues
  - External Issues
- RL and DOE-HQ Issues/Requests
- Integration Activities
- Breakthroughs/Opportunities for Improvement
- Baseline Change Status
- Risk Management.

RPP line-item projects generate project-specific monthly performance reports following the same outline. The Office or Safety Regulation also generates a Monthly Performance report that statuses activities related to oversight of WTP radiological, nuclear, and process safety regulation. Reporting requirements in the areas of environment, safety and health (ES&H) are required in accordance with the *Occupational Safety and Health Act of 1970*, the *Price Anderson Amendments Act of 1988* (10 CFR 820); and DOE O 231.1, *Environment, Safety*

and Health Reporting. RPP contractors are also required to report unusual occurrences in accordance with DOE M 232.1-1A, *Occurrence Reporting and Processing of Operations Information*. The performance measurement and reporting document hierarchy is shown in Figure 5-5.

Figure 5-5. Performance Measurement and Reporting Document Hierarchy.



5.6 CONTRACT MANAGEMENT

The RPP contract management process is implemented through the Federal Acquisition Regulation, Department of Energy Acquisition Regulation, DOE Acquisition Letters, various federal acquisition statutes, and the TFC and WTPC contracts. The RPP implements the

requirements for management of contract authority presented in DOE O 541.1A, *Appointment of Contracting Officers and Contracting Officer's Representatives*, and DOE O 542.1, *Competition in Contracting*.

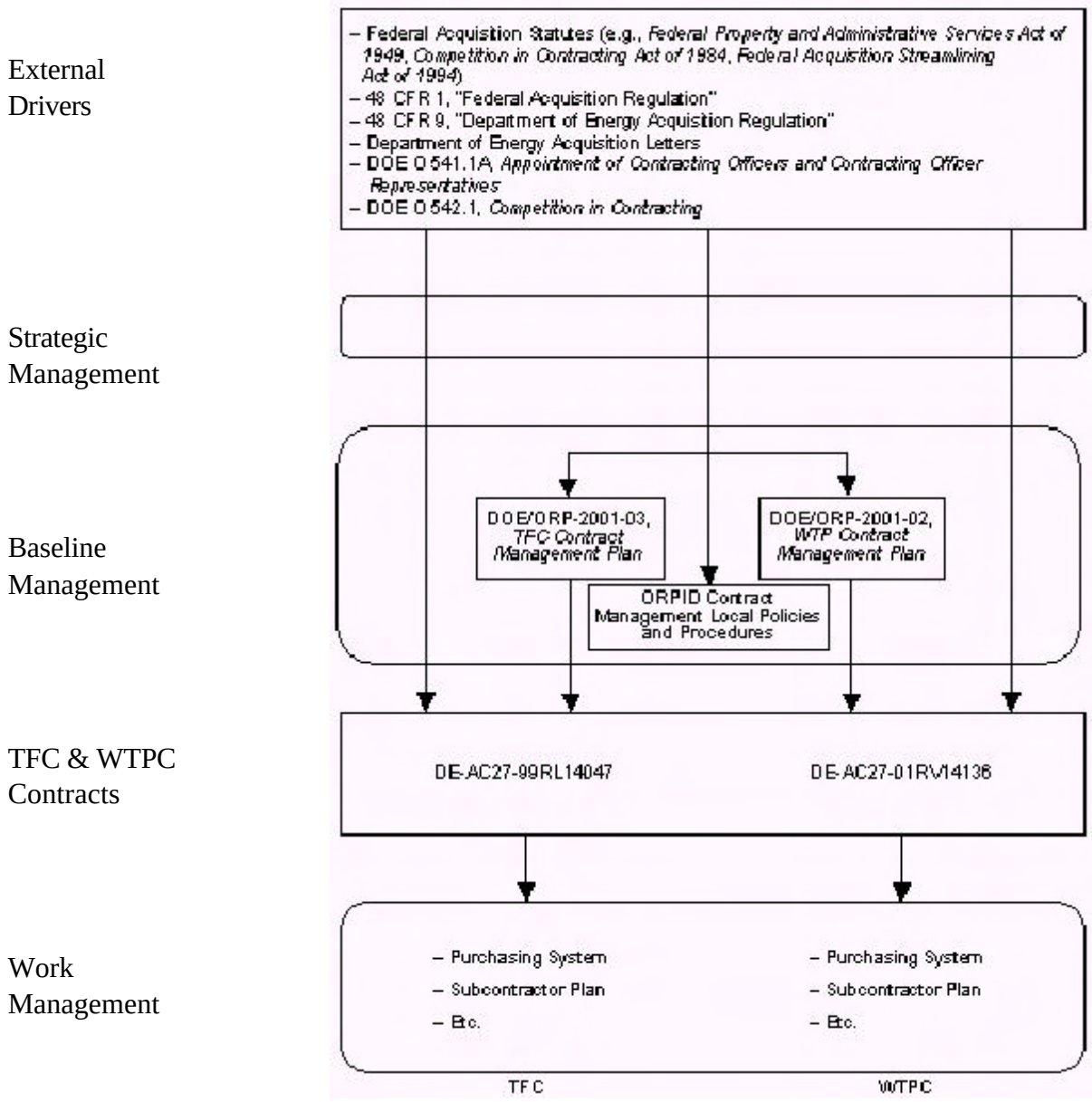
The RPP contracting management operating philosophy is governed by the Federal Acquisition Regulation Guiding Principles: (1) satisfy the customer in terms of cost, quality, and timeliness of the delivered product or service; (2) minimize administrative operating costs; (3) conduct business with integrity, fairness, and openness; and (4) fulfill public policy objectives.

Contracts and subcontracts and RPP contract management systems are structured to meet and fulfill the Federal Acquisition Regulation Guiding Principles via the following mechanisms and processes:

- Self-assessment using the Balanced Scorecard model
- Full and open competition for federal acquisition requirements and maximum practical competition for contractor acquisition requirements
- Commitment to Departmental and project small-business subcontracting goals and objectives
- Controlled, uniform direction to the contractor through management of the contracting officer and contracting officer's representative system
- Use of requirements-based contract management plans for the WTPC and TFC contracts
- Workforce training in technical areas and contract management philosophy.
- Contracts structured with performance-driving incentive provisions that include objective performance measures.

The RPP Prime Contractors are managed in accordance with the WTPC and TFC contract management plans, as shown in Figure 5-6. The ORP also awards and manages smaller procurements for services to directly support ORP.

Figure 5-6. Contract Management Document Hierarchy.



5.7 INTEGRATED SAFETY MANAGEMENT

A comprehensive ES&H management system capable of managing complex hazards, risks, and issues is necessary to complete the RPP mission safely and efficiently. The *Safety Management System Policy* (DOE P 450.4)[7] establishes the basis for an ISMS. The objective of the ISMS is to "DO WORK SAFELY," ensuring the safety of workers, the public, and the environment. Using implementing mechanisms that support deployment of ES&H requirements into work planning and execution, a fully implemented ISMS requires feedback that sustains continuous improvement. As a basic principle, safety is integrated into daily

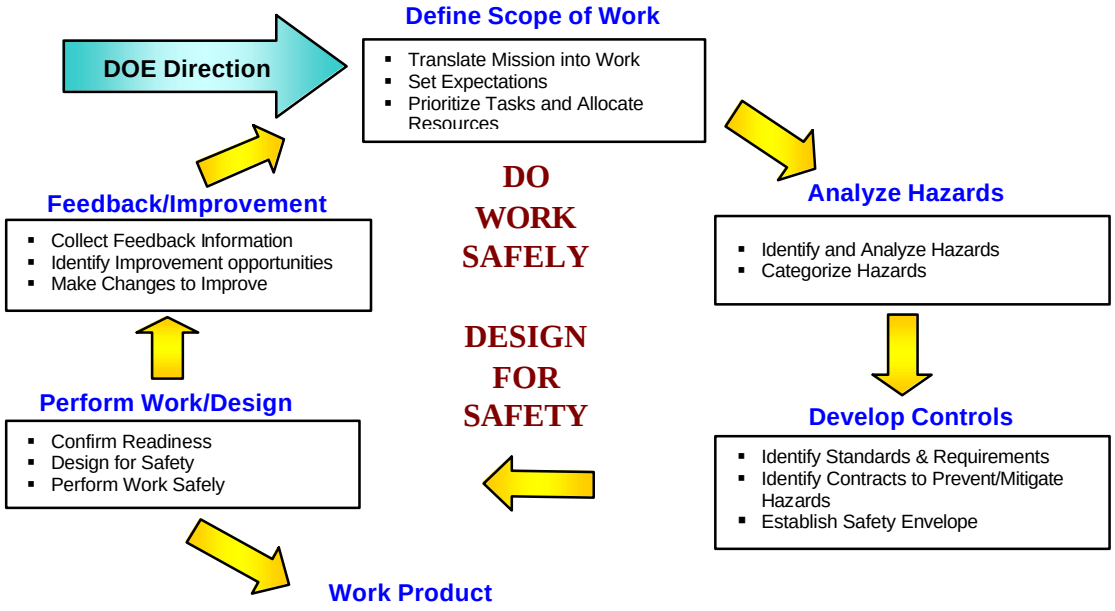
work activities. As such, the ISMS shifts the focus of safety into work processes that are used to plan, analyze, perform, assess, and improve the safe and efficient conduct of work at all levels of the project.

The *Environment, Safety, and Health Policy* (ORP PD 450.1) establishes the RPP policy on the ISMS and directs that the ISMS be implemented throughout the RPP. ORP PD 450.1 directs ISMS implementation through the five core functions illustrated in Figure 5-7. The five core functions and seven guiding principles are established in DOE P 450.4 and provide guidance and clarification regarding integration of the ISMS across organizational functions and interfaces. ORP functions, responsibilities, and authorities are described in ORP M 411.1-1, in accordance with DOE P 411.1, *Safety Management Functions, Responsibilities, and Authorities Policy*.

RPP contractors are required to implement and support the ISMS to comply with 48 CFR 970.5223-1, "Integration of Environment, Safety, and Health into Work Planning and Execution." The ORP and the RPP contractors' safety performance commitments must be consistent with the project annual work plans and must meet or exceed the safety performance goal(s) established for the project. 48 CFR 970.5223-1 requires an annual review and update of the ISMS, which will include the following:

- A summation of contractor performance against the previous year's ES&H performance objectives, performance measures, and commitments
- The resources planned and budgeted for the out-year to meet ES&H needs
- Corrective actions for functional ES&H program integration issues
- Corrective actions to improve ISM implementation and effectiveness

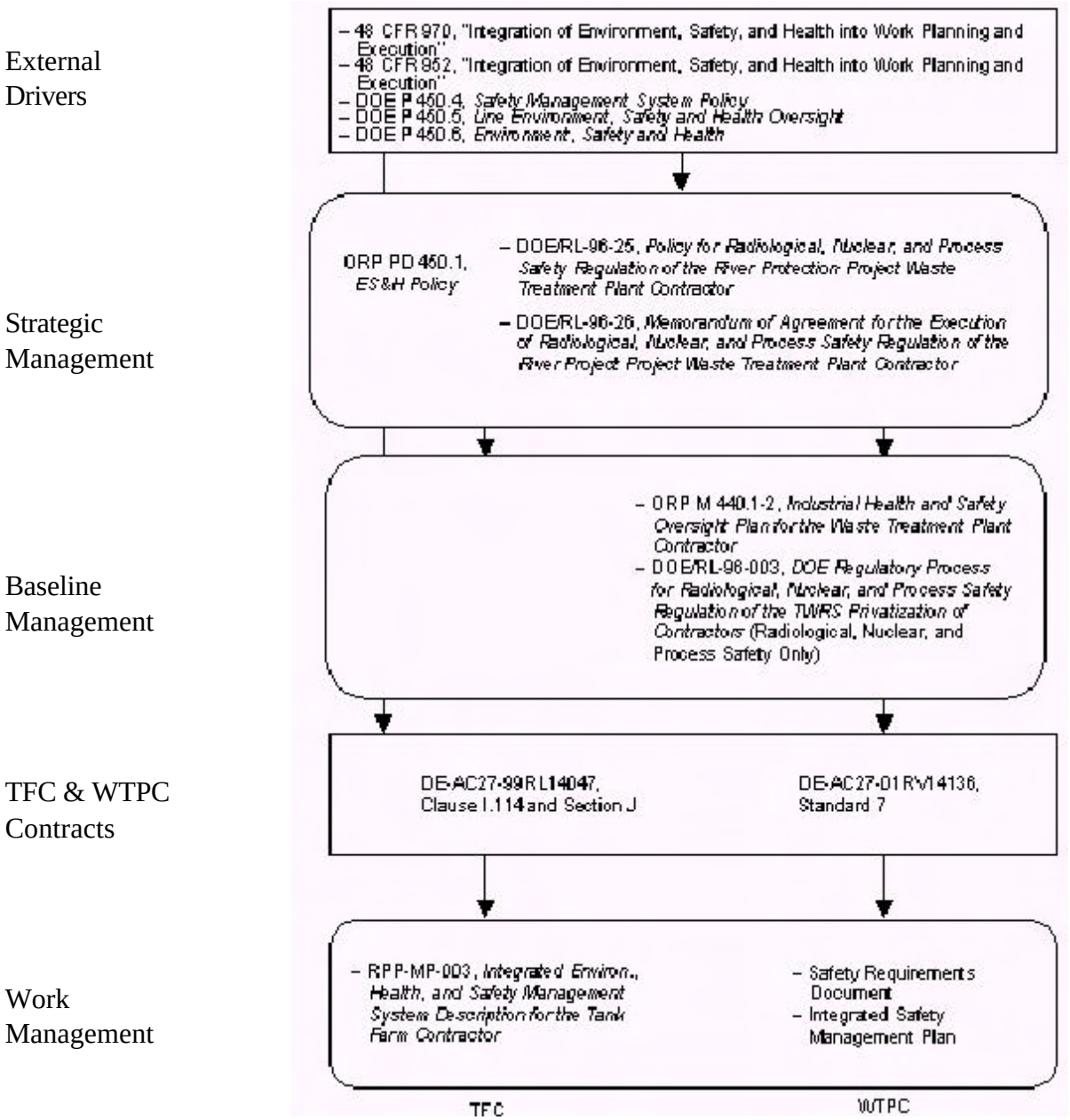
Figure 5-7. Office of River Protection Integrated Safety Management Core Functions.



- ES&H performance objectives, measures, and commitments for the next year
- Changes required in a self- and independent assessment focus or criteria
- Changes required to an ISMS description document system
- Impacts of any changes in laws, regulations, and directives.

Figure 5-8 illustrates the Integrated Safety Management document hierarchy.

Figure 5-8. Integrated Safety Management Document Hierarchy



The AMO has line management responsibility for operational safety, including direct responsibility for the protection of workers, the public, and the environment, and therefore, ISM implementation for the TFC. The AMPD has responsibility for overseeing ISM implementation for the WTPC and all construction projects. The current measures of effectiveness for ISM implementation are tracked by the following set of four project-wide performance indicators: (1) total recordable case rate, (2) occupational safety and health cost index, (3) worker radiation dose, and (4) reportable occurrences of releases to the environment. The AMSQ and staff provide support to the AMO and AMPD and are advocates for ISM. The OSR reviews and approves the WTPC ISM process and program and periodically assesses implementation in the areas of radiological, nuclear, and process safety.

- Environmental Management

  Environmental Management is a key element of the ISMS for the RPP, ensuring that the analysis of environmental impacts is integrated into the planning and execution of work. ORP employees and contractors are stewards of the environment, as reflected in ORP policies and actions the project undertakes. Protection of the environment includes protection of natural, archeological, cultural, and historical resources and public health. The RPP is committed to achieving environmental excellence by systematically integrating environmentally sound principles into all aspects of the project work with RPP contractors, RL, and other Hanford Site Prime Contractors.

  ORP activities are subject to numerous environmental laws, regulations, and requirements, including, but not limited to, the *National Environmental Policy Act of 1969*; *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*; *Resource Conservation and Recovery Act of 1976*; *Clean Air Act of 1977*; *Clean Water Act of 1977*; *Toxic Substances Control Act of 1976*; *Emergency Planning and Community Right-to-Know Act of 1986*; *Safe Drinking Water Act of 1974*; *Federal Insecticide, Fungicide, and Rodenticide Act of 1972*; *Pollution Prevention Act of 1990*; *National Historic Preservation Act of 1966*; *Endangered Species Act of 1973*; and several other federal and state laws.

  To ensure compliance and foster environmental stewardship, the ORP works in partnership with contractors, regulators, Tribal Nations, other stakeholders, and the public to:

  — Consider the impacts of ORP activities on the environment.

  — Comply with the Tri-Party Agreement, consent decrees and orders, laws, regulations, permits, and directives.

  — Integrate pollution prevention, resource conservation, waste minimization, and environmental impact considerations.

  — Identify and mitigate adverse environmental conditions before they pose a threat to the environment.

— Promptly report and seek to correct environmental incidents and deficiencies.

Because of the nature of work activities to be performed within the RPP, identification of potential hazards and environmental impacts will be a continual process. The ORP and its contractors will identify the environmental impacts of the RPP through several mechanisms, such as *National Environmental Policy Act of 1969* documentation, environmental monitoring, spill reporting, chemical-use tracking and reporting, pollution-prevention opportunity assessments, environmental permitting, assessments, inspections, self-assessments, reports, and waste-generation tracking and reporting. RPP contractors are contractually required to comply with environmental management requirements.

- Occupational Safety and Health

  The ORP believes that all occupational injuries and illnesses are preventable. Injuries and incidents are not mere chance occurrences, but represent a system failure that management is responsible to prevent through the implementation of a comprehensive ISMS.

  The major external requirement for occupational safety and health for the ORP and its contractors is DOE O 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*. This Order establishes the framework for an occupational protection program that supports the establishment of a safe and healthy workplace during all phases of the project. The occupational protection program for federal employees is implemented through HFID 440.1, *Federal Employee Occupational Safety and Health (FEOSH) Program at Hanford*. The ORP is committed to worker participation in every aspect of the ISMS. In order that ISM be fully integrated into the workplace culture ORP envisions, it is imperative that worker involvement be strong in the many facets of the occupational safety and health program. Only through the participation and support of the workers can the ORP expect to prevent injuries, illnesses, and accidents. The ORP supports and sponsors participation of the RPP organizations in the DOE Occupational Safety and Health Administration Voluntary Protection Program. The Voluntary Protection Program has, just as ISMS has, worker involvement as a key component of its program. This inclusion acknowledges the importance of worker involvement in the sustaining and maintaining of any viable safety system. Participation in the Voluntary Protection Program, coupled with a healthy and robust ISMS, assists the RPP in accomplishing the mission safely, compliantly, and, efficiently.

- Nuclear Safety

  The objective of the RPP Nuclear Safety Program is to ensure that RPP nuclear facilities are sited, designed, constructed, operated, decommissioned, and disposed while providing adequate protection from nuclear hazards to workers, the public, and the environment. This is accomplished through stringent enforcement of nuclear safety

requirements in 10 CFR 830, "Nuclear Safety Management," within the context of a Safety Authorization Basis for work activities.

The AMSQ is responsible for all aspects of establishing and maintaining the safety Authorization Basis programmatic requirements documents and the associated nuclear safety programs for the tank waste storage and retrieval operation activity, including resolution of any safety issues. The Office of Safety Regulation is responsible for defining the Nuclear Safety Program for the WTPC. The line managers (AMO and AMPD) are responsible for implementing the Nuclear Safety Program through the TFC and the WTPC. The Office of Safety Regulation will provide radiological, nuclear, and process safety regulation of the WTPC. This regulation is accomplished using standards-based ISM (see Figure 5-9). Standards-based ISM requires the contractor to define the work to be accomplished, identify the hazards associated with the work, and determine specific strategies to control the hazards. The contractor then selects (and DOE reviews and approves) the standards to implement the control strategies. The standards-based ISM process and the commitment that the process is conducted in full view of the public, stakeholders, and Tribal Nations, ensure that the unique hazards of the contractor's process are specifically and adequately controlled. The following major regulatory actions are required:

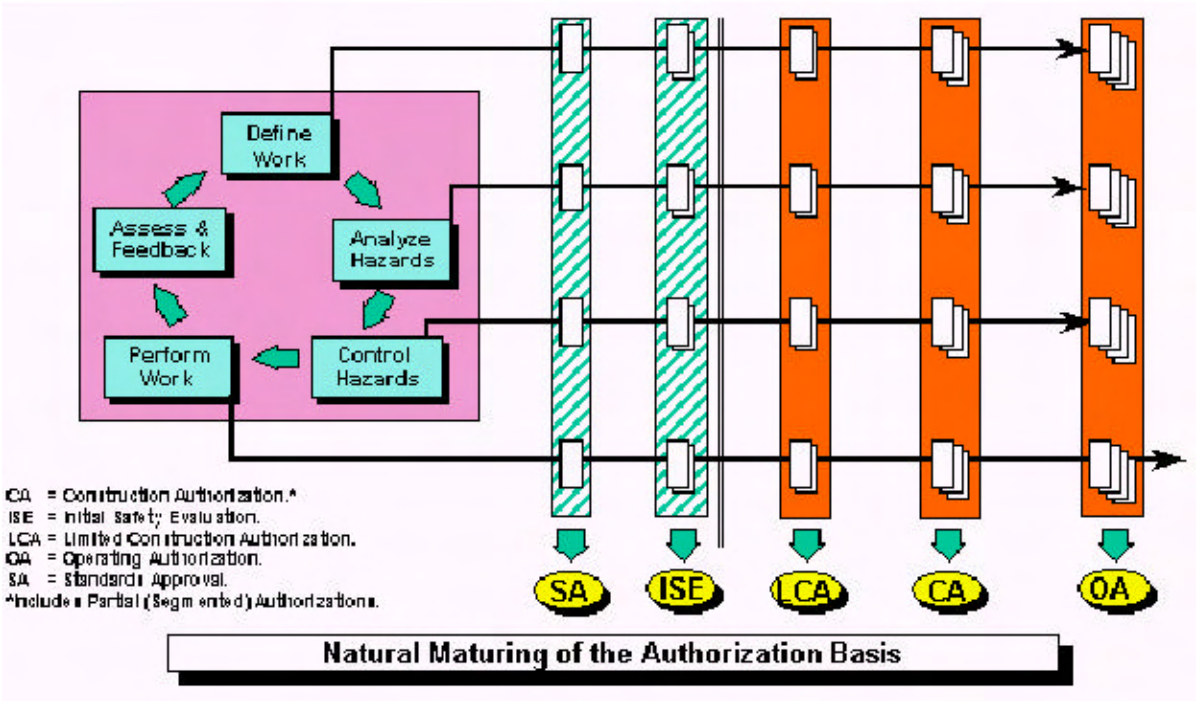
— Standards Approval, including Authorization Basis Amendment Requests, which occurs after the contractor has tailored its recommended standards and requirements using a contractually-prescribed process of hazards-based, ISM

— Verification and Confirmation--the execution of a comprehensive Inspection Program including Enforcement and Corrective Action

— Recommendation of Major Milestone Authorizations, including Limited Construction, Construction, Operations, and Deactivation.

The above regulatory actions are supported by Regulatory Program administration and by Safety Management activities including the observation of design reviews, the conduct of topical meetings, and the performance of ISM reviews. RPP contractors are contractually required to develop and maintain their own nuclear safety program and comply with respective nuclear safety requirements.

Figure 5-9. Integrated Safety Management: The Foundation of Authorization Basis.



- Radiological Safety

  The RPP conducts radiological operations in accordance with 10 CFR 835, "Occupational Radiation Protection," and in a manner that ensures radiation exposures to its workers, the public, and the environment are maintained within regulatory limits. In addition, the RPP takes deliberate actions to reduce exposures and releases to As Low As Reasonably Achievable.

  The RPP conduct of operations for radiological safety includes the following:

  — Establishing and maintaining regulatory policy and guidance reflective of national and international radiation protection standards and recommendations

  — Training and qualifying personnel who perform radiological work

  — Monitoring of radiological operations performance to control the spread of radioactive materials

  — Incorporating dose reduction, contamination reduction, and waste minimization features into the design of new facilities and significant modifications to existing facilities in the earliest planning stages.

  RPP contractors are contractually required to develop, implement, and maintain a radiological safety program and be responsible for their internal conduct of radiological operations processes. The RPP contractors are required to develop and maintain a radiological safety program in accordance with radiological safety requirements.

5.8 EMERGENCY MANAGEMENT

The RPP Emergency Management Program is implemented in accordance with DOE/RL-94-02, *Hanford Emergency Management Plan*; DOE-0223, *Emergency Plan Implementing Procedures*; federal laws; and the TFC and WTPC contracts. This program implements the requirements of DOE O 151.1A, *Comprehensive Emergency Management System*; DOE M 232.1-1A; DOE/RL-96-0003, *DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP-WTP Contractor*; HFID 232.1B, *Notification, Reporting, and Processing of Operations Information*; 29 CFR 1910.38, "Employee Emergency Plans and Fire Prevention Plans;" 40 CFR 68, "Chemical Accident Prevention Provisions;" 40 CFR 355, "Emergency Planning and Notification;" 40 CFR 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and use Prohibitions;" WAC 246-247, "Radiation Protection Air Emissions;" and WAC 173-303, "Dangerous Waste Regulations."

The RPP uses the emergency management program requirements established in DOE/RL-94-02 and works within the framework of the Hanford Emergency Response organization. This plan incorporates into one document an overview of the emergency management program for the entire Hanford Site. The program has been developed in accordance with DOE Orders as well as federal and state regulations to protect worker and public health and safety and the environment in the event of an emergency at or affecting the Hanford Site. The plan describes the overall emergency organization, authorities, and responsibilities for response to and mitigation of emergency events involving RPP facilities and activities as well as other facilities and activities on the Hanford Site. The emergency management program consists of the following five elements: emergency planning, preparedness, response, recovery, and readiness assurance. These program elements are developed using a graded approach, based on and commensurate with the hazards and consequences associated with onsite facilities and activities, and offsite impacts.

The ORP, TFC, and WTPC implement DOE/RL-94-02 through DOE-0223. The TFC and WTPC develop and implement facility-specific procedures and facility emergency plans as needed. These procedures contain detailed information and the specific instructions, including response actions, associated precautions and prerequisites, and identification of individuals responsible to carry out the actions during a drill, exercise, or actual emergency.

As set forth in *Memorandum of Agreement Among the Office of Environmental Management, the Office of River Protection, and the Richland Operations* Office, the Manager, RL is responsible for Hanford Site safety. In terms of safety as related to emergency management, a memorandum of agreement between ORP and RL is under development to further define the DOE roles and responsibilities specific to the RPP and the Hanford Site. Figure 5-10 shows the emergency management document hierarchy.

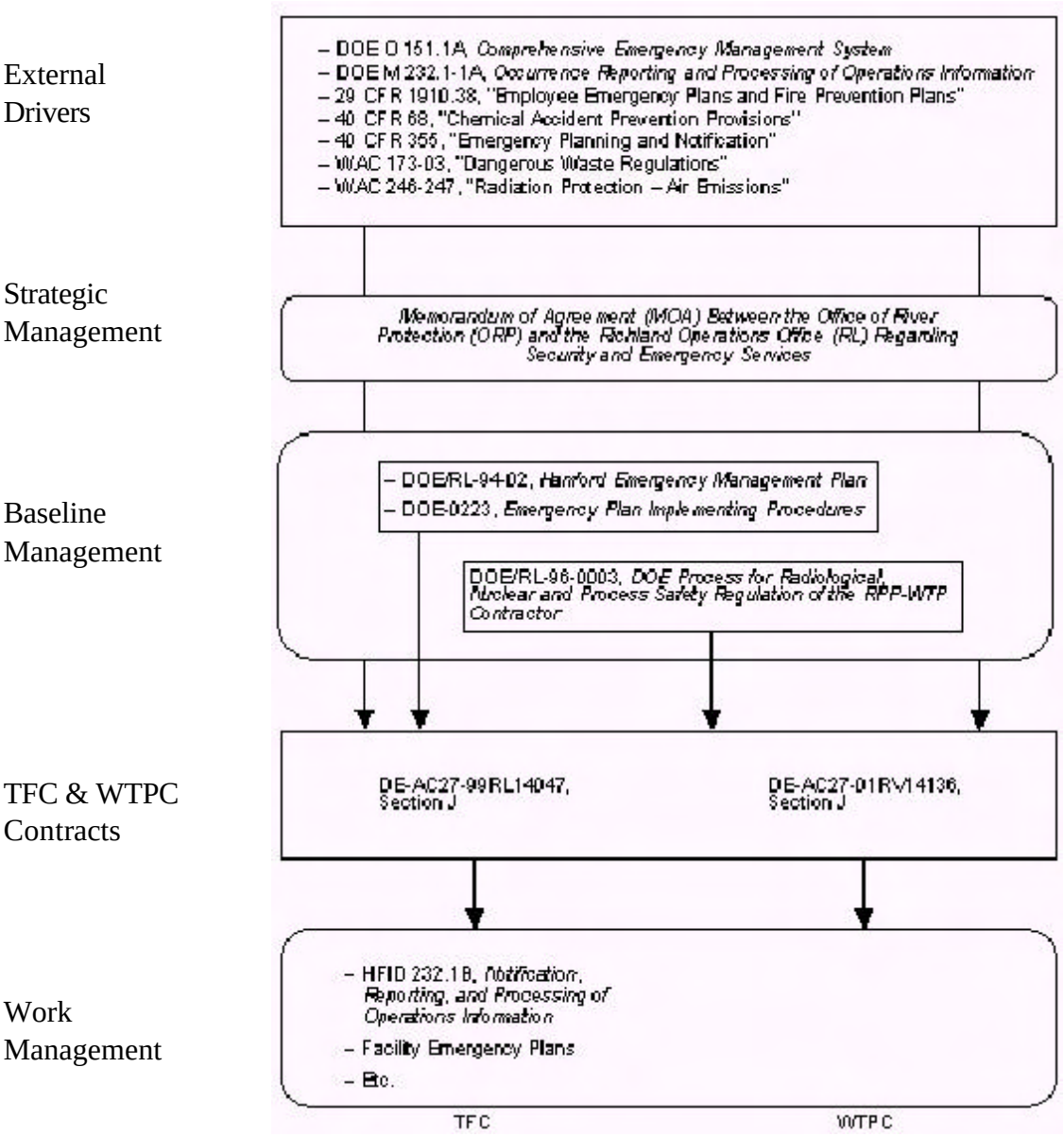
5.9 SAFEGUARDS AND SECURITY

The RPP SAS Program is implemented in accordance with DOE SAS standards and requirements, federal laws, and the TFC and WTPC contracts. The program scope is limited to the specific needs and objectives of the RPP and addresses the following program elements: SAS program management, protection program operations, information security, and personnel security.

As set forth in the *Memorandum of Agreement Among the Office of Environmental Management, the Office of River Protection, and the Richland Operations* Office, the Manager, RL is responsible for Hanford Site security. In support of this agreement, specific SAS roles and responsibilities have been defined for ORP and RL in the *Memorandum of Agreement Between the Office of River Protection and the Richland Operations Office Regarding Security and Emergency Services*.

The RPP SAS Program is implemented at the facility and activity level through Site- and contractor-specific plans and procedures. The ORP SAS Program plans and procedures are under development. Until a formal program is in place, ORP will use the RL SAS plans and processes. The next revision of the Hanford Site SAS Plan (scheduled for November 2002) will include descriptions of the ORP and TFC SAS programs.

Figure 5-10. Emergency Management Document Hierarchy



An ICD is being developed between the TFC and the Hanford Site security contractor that describes Site security services provided and defines the roles and responsibilities between the two contractors. The program elements covered by this ICD include foreign ownership, control, or influence; surveys and self-assessments; program planning; personnel development; training; badging; storage of classified documents; unclassified computer security; processing of all access authorizations; unclassified visits and assignments by foreign nationals; and foreign travel. This ICD will be expanded in scope to address the SAS interfaces and relationships among the WTP, TFC, and Site Security contractors. The SAS plans and procedures for the WTP are under development. A separate SAS plan will be developed by the WTPC. Figure 5-11 shows the SAS document hierarchy.

5.10 QUALITY ASSURANCE

The RPP Quality Assurance (QA) Program is implemented in accordance with ORP PD 414.1, *River Protection Project Quality Assurance Policy*; ORP M 414.1-1, ; *Office of River Protection Quality Assurance Program Description*; 10 CFR 830, Subpart A; DOE/RW-0333P, *Quality Assurance Requirements and Description (QARD)*DOE O 414.1A; and the TFC and WTPC contracts.

The ORP QARD is an umbrella document describing quality activities and processes. It defines roles, responsibilities, and relationships. Lower-tiered implementation plans may apply to specific parts of the RPP or may be cross-cutting and affect more than one organization or activity. The implementing procedures are applied to nuclear and non-nuclear facilities and activities using a graded approach. The graded approach is used to evaluate hazards or risks and to determine the appropriate controls. The varying degrees of controls applied depend on function, complexity, consequence of failure, reliability, repeatability of results, life-cycle stage of the facility, and economic considerations. Risk is a fundamental consideration in determining to what extent controls are applied. That is, as the complexity of safety, design, construction, operations, and radiological hazards or risks increase, so do the QA requirements. Implementation of the graded approach is described in 10 CFR 830.120.

The ORP QA responsibilities are focused on achieving quality RPP products. RPP products include reports, new nuclear facilities, vitrified waste products, and tank farm upgrades. ORP QA activities include review and oversight of QA plans and activities of the ORP and its contractors. QA program plans and implementing procedures are to include the performing activity of achieving quality and the verification activity of quality. Conducting assessments evaluating the effectiveness of the QA plans against quality criteria is a typical ORP management assessment activity. Assessments also include checking, auditing, inspection, and surveillance of DOE and contractor activities affecting quality achievement. Critical review and approval activities by ORP are being included in the baseline (WBS dictionaries and schedules).

Figure 5-11. Safeguards and Security Document Hierarchy.

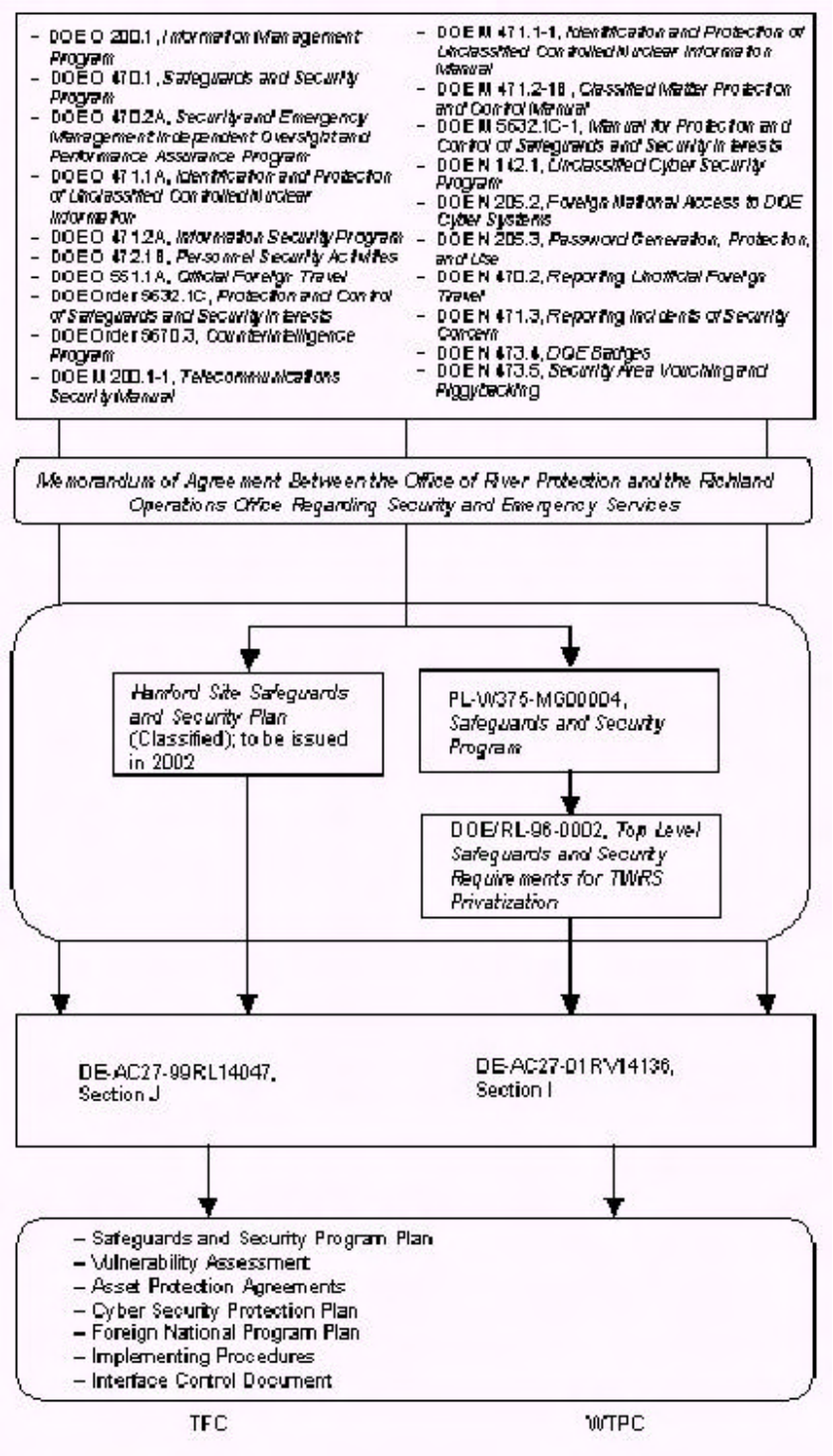
External Drivers

Strategic Management

Baseline Management

TFC & WTPC Contracts

Work Management



The TFC and WTPC, and their subcontractors, are required by contract and federal law to have QA programs that comply with DOE QA requirements. The ORP reviews and approves their plans. The QA document hierarchy is shown in Figure 5-12.

5.11 COMMUNICATIONS

ORP communications are implemented in accordance with DOE Order 1220.1A, *Congressional and Intergovernmental Affairs*; DOE Order 1340.1B, *Management of Public Communications, Publications, and Scientific, Technical, and Engineering* , which established ORP's mission. This system provides information and open communications to employees, DOE-HQ, regulatory agencies, stakeholders, media, Tribal Nations, and the community to enhance understanding and support for ORP's mission and purpose in cleaning up the Hanford Site's tank wastes. While Communications supports the mission to build and operate the WTC to complete the cleanup of the Hanford Site's highly radioactive tank waste, it also encourages and provides the mechanisms to ensure open communications activities are being conducted throughout the RPP. Figure 5-13 shows the communications document hierarchy. *Publications*; and Section 3139 of the *Strom Thurmond National Defense Authorization Act for Fiscal Year 1999*

Communications provides an operational framework for RPP communications efforts and the management system allows planned and responsive communications programs that promote accurate and timely information regarding the RPP's progress. The ORP Communications system actively promotes and provides open, two-way communications to employees, stakeholders, regulators, Tribal Nations, and RPP management. The objectives are as follows:

- Develop and implement information programs and activities.
- Advise and assist RPP management and employees on communication formats and planned actions.
- Establish positive relationships with the media, Tribal Nations, stakeholders, regulators, and other interested parties.
- Build and strengthen contractor and Congressional relationships to ensure the RPP mission is supported and achieved.

Figure 5-12. Quality Assurance Document Hierarchy.

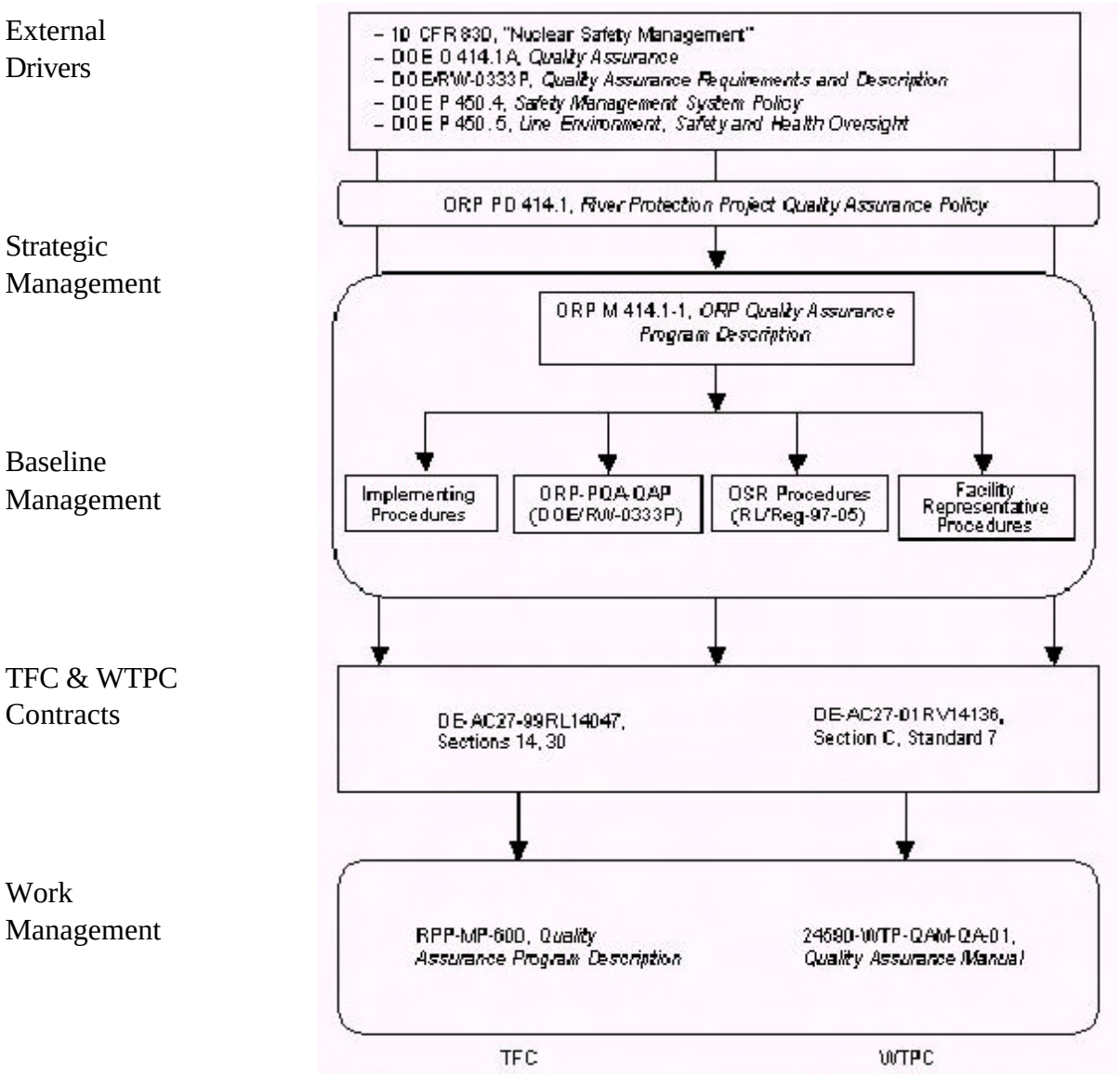
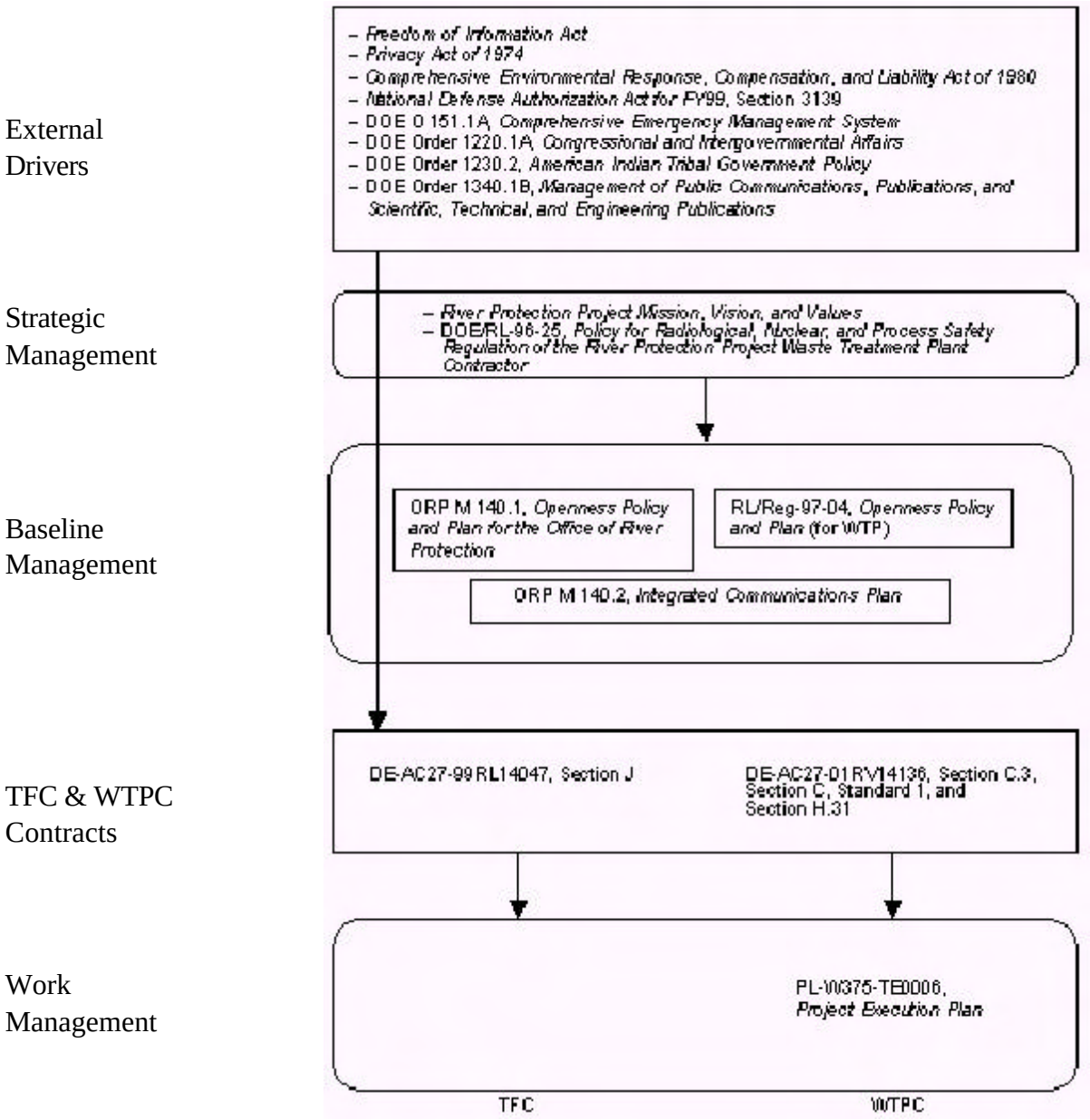


Figure 5-13. Communications Document Hierarchy.



6.0 REFERENCES

Acts

Atomic Energy Act of 1954, as amended, 42 USC 2011, et seq.

Clean Air Act of 1977, 42 USC 7401, et seq.

Clean Water Act of 1977, as amended, 33 USC 1251, et seq.

Competition in Contracting Act of 1984, as amended, 41 USC 251, et seq.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 USC 9601, et seq.

Emergency Planning and Community Right-to-Know Act of 1986, 42 USC 11001, et seq.

Endangered Species Act of 1973, 16 USC 1531, et seq.

Energy Reorganization Act of 1974, Public Law 93-438, 88 Stat. 1233 at 1237, 42 USC 5814.

Federal Acquisition Streamlining Act of 1994, Public Law 103-355, 108 Stat. 3243.

Federal Insecticide, Fungicide, and Rodenticide Act of 1972, 7 USC 135, et seq.

Federal Property and Administrative Services Act of 1949, Public Law 81-152, 63 Stat. 377.

Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001, Public Law 106-398.

Freedom of Information Act, 5 USC 552, et seq.

National Environmental Policy Act of 1969, as amended, 42 USC 4321, et seq.

National Historic Preservation Act of 1966, as amended, 16 USC 470, et seq.

Nuclear Waste Policy Act of 1982, as amended, 42 USC 10101, et seq.

Occupational Safety and Health Act of 1970, as amended, 29 USC 651, et seq.

Pollution Prevention Act of 1990, 42 USC 13101, et seq.

Price-Anderson Amendments Act of 1988, as amended, 42 USC 2010, et seq.

Privacy Act of 1974, 5 USC 552a, et seq.

Resource Conservation and Recovery Act of 1976, Public Law 94-580, 90 Stat. 2795, 42 USC 6901 et seq.

Safe Drinking Water Act of 1974, 42 USC 300f, et seq.

Strom Thurmond National Defense Authorization Act for Fiscal Year 1999, as amended, Public Law 105-261.

Toxic Substances Control Act of 1976, 15 USC 6921, et seq.

Washington State Hazardous Waste Management Act, as amended, RCW 70.105.

Code of Federal Regulations

10 CFR 830, "Nuclear Safety Management," Subpart A, "Quality Assurance Requirements," *Code of Federal Regulations*, as amended.

10 CFR 835, "Occupational Radiation Protection," *Code of Federal Regulations*, as amended.

29 CFR 1910.38, "Employee Emergency Plans and Fire Prevention Plans," *Code of Federal Regulations*, as amended.

40 CFR 68, "Chemical Accident Prevention Provisions," *Code of Federal Regulations*, as amended.

40 CFR 355, "Emergency Planning and Notification," *Code of Federal Regulations*, as amended.

40 CFR 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and use Prohibitions," *Code of Federal Regulations*, as amended.

48 CFR 1, "Federal Acquisition Regulation," *Code of Federal Regulations*, as amended.

48 CFR 9, "Department of Energy Acquisition Regulation,"*Code of Federal Regulations*, as amended.

48 CFR 952, "Integration of Environment, Safety, and Health into Work Planning and Execution,"*Code of Federal Regulations*, as amended.

48 CFR 970, "Integration of Environment, Safety, and Health into Work Planning and Execution," *Code of Federal Regulations*, as amended.

64 CFR 61615, "Record of Decision: Hanford Comprehensive Land-Use Plan EIS," *Code of Federal Regulations*, as amended.

65 CFR, "Record of Decision for the Department of Energy's Waste Management Program; Treatment and Disposal of Low-Level Waste and Low-Level Mixed Waste," *Code of Federal Regulations*, as amended.

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6 Formal interface documents include memoranda of understanding, memoranda of agreement, and ICDs, or their equivalent. These documents serve as mechanisms for defining roles and responsibilities on either side of an interface.

7 The term “safety” is used synonymously in this document for purposes of prose with the term “environment, safety, and health” to encompass protection of the public, the workers, and the environment.

APPENDIX A

PROJECT MANAGEMENT PLAN TO PROJECT EXECUTION PLAN COMPLIANCE MATRIX

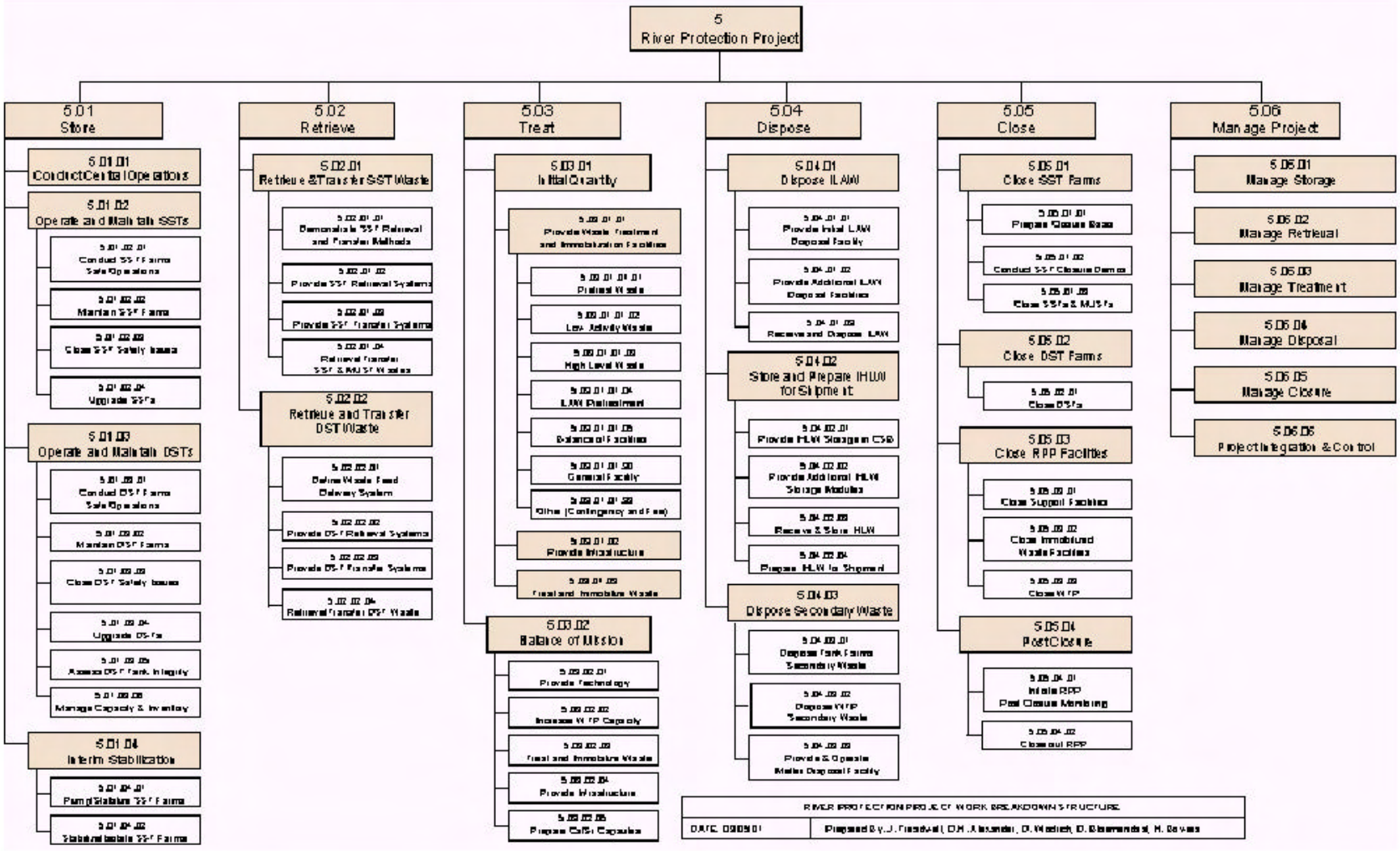
Table A-1. River Protection Project - Project Management Plan versus DOE O 413.3, *Program and Project Management for the Acquisition of Capital Assets*, Project Execution **Plan Summary Compliance Matrix. (2 sheets)**

DOE O 413.3 Project Execution Plan elements	Met?	Project Management Plan chapter	Project Management Plan section title(s)
Element a) "Title Page"	Yes	N/A	N/A
Element b) "Introduction"	Yes	1.0 Introduction	N/A – PMP includes an Executive Summary
Element c) "Justification of Mission"	Yes	2.0 Mission	2.0 References the justification of mission need.
			2.1 The Challenge. Describes the mission, technical, and management challenges
			2.2. Strategy. Includes project concept, goals, and objectives
Element d) "Project Description" Element f) "Work Breakdown Structure" (WBS)" Element g) "Resource Plan" Element h) "Project technical, Schedule, and Cost Life-Cycle Baselines"	Yes	3.0 Project Baseline	3.1 Scope (Work to be Executed)
			3.1.1 Work Breakdown Structure
			3.2 Schedule
			3.3 Cost
Element e) "Management Structure and Responsibilities"	Yes	4.0 Management Structure, Responsibilities, and Authorities	4.1 RPP Organization and Responsibilities
			4.2 ORP Organization
			4.3 RPP Organizational Interfaces
			4.4 Contracting Authority
			4.5 Critical Decision Authorities
Element i) "Baseline Change Control Approval Thresholds"	Yes	5.0 Project Management Systems	5.2 Configuration Management - including change control approval thresholds in referenced procedure
Element j) "Risk Management Assessment"	Yes		5.4 Risk Management
Element l) "Acquisition Strategy Plan"	Yes	4.0 Management Structure, Responsibilities, and Authorities	4.4 Contracting Authority
		5.0 Project Management Systems	5.6 Contract Management
Element k) "Project Control System Description"	Yes	5.0 Project Management Systems	5.5 Performance Measurement and Reporting
Element m) "Alternate, Tradeoffs"	Yes	2.0 Mission	2.1 The Challenge
Element n) "Technical Considerations"	Yes		2.2 Strategy

APPENDIX B

RIVER PROTECTION PROJECT WORK BREAKDOWN STRUCTURE

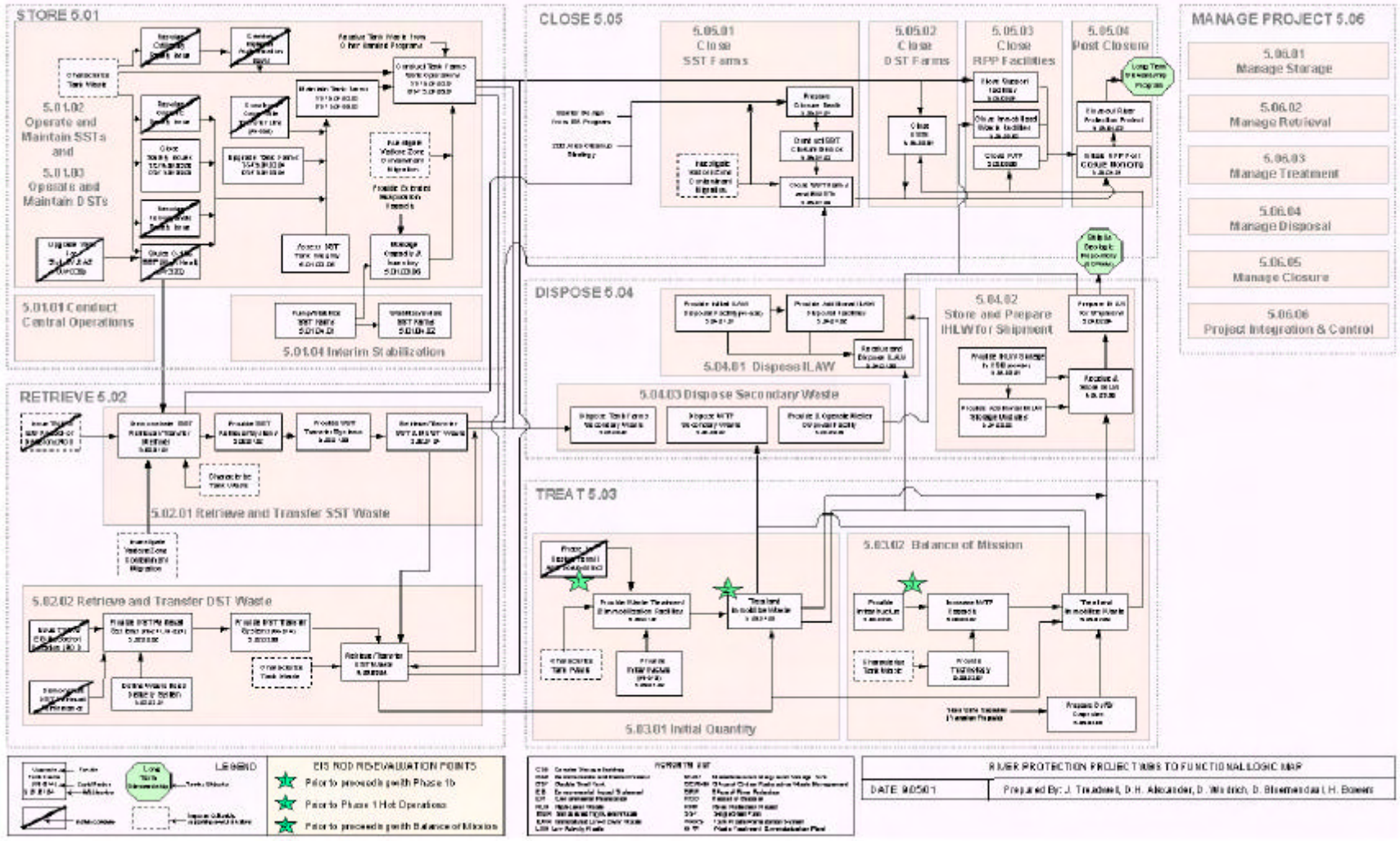
Figure B-1. Work Breakdown Structure.



APPENDIX C

RIVER PROTECTION PROJECT WORK BREAKDOWN STRUCTURE TO FUNCTIONAL LOGIC MAP

Figure C-1. River Protection Project Work Breakdown Structure to Functional Logic Map.



APPENDIX D

RIVER PROTECTION PROJECT MANAGEMENT SUMMARY SCHEDULE

Figure D-1. River Protection Project Management Summary Schedule.

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